

March 2000



# Standard Operating Procedures

*for the*

## ***Building Performance Assessment Team Program***

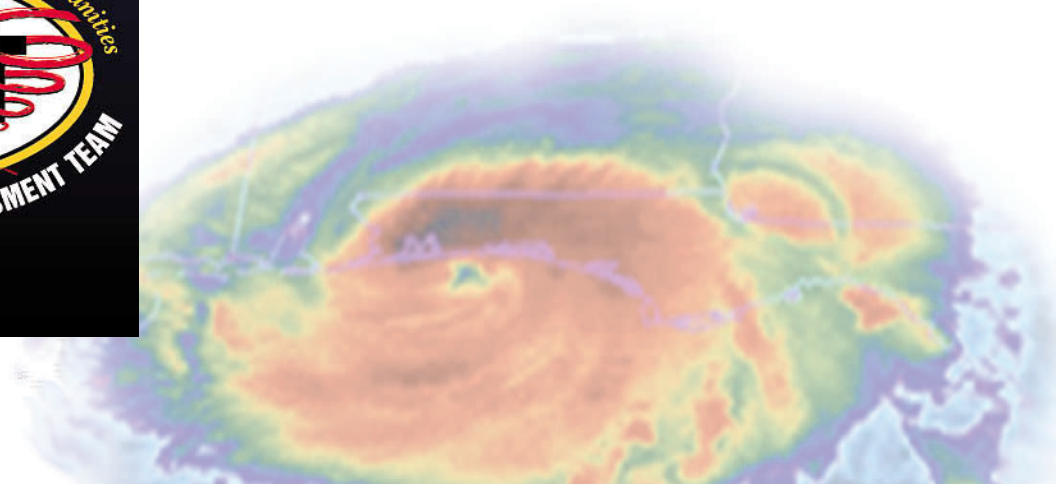


### **FEDERAL EMERGENCY MANAGEMENT AGENCY**

#### **Mitigation Directorate**

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[www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat)



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## **List of Acronyms**

<b>BPAT</b>	FEMA's Building Performance Assessment Team
<b>CO</b>	FEMA's Contracting Officer
<b>DFCO-M</b>	FEMA's Deputy Federal Coordinating Officer for Mitigation
<b>DFO</b>	Disaster Field Office
<b>FCO</b>	Federal Coordinating Officer
<b>FEMA</b>	Federal Emergency Management Agency
<b>GIS</b>	Geographic Information System
<b>GPO</b>	U.S. Government Printing Office
<b>GPS</b>	Geographic Positioning System
<b>HQ</b>	FEMA Headquarters
<b>OSHA</b>	U.S. Occupational Safety and Health Administration
<b>PFAT</b>	BPAT Preliminary Field Assessment Team
<b>PO</b>	FEMA's Project Officer
<b>RO</b>	FEMA Regional Office
<b>SOP</b>	BPAT Standard Operating Procedure
<b>TL</b>	BPAT Team Leader
<b>TM</b>	BPAT Team Manager
<b>TS/E Contractor</b>	FEMA's Technical Support and Engineering Contractor

Note: [See Appendix D: \*BPAT Glossary\*](#) for additional information

## **Executive Summary**

Among the activities that the Federal Emergency Management Agency (FEMA) carries out in response to natural disasters caused by events such as floods and hurricanes is the deployment of Building Performance Assessment Teams (BPATs). These teams are formed by and operate under the direction of the Mitigation Directorate's Program Assessment and Outreach Division, which is located at FEMA Headquarters (HQ). While the BPAT program is managed from FEMA HQ, Regional Office, Disaster Field Offices, and Regional staff play a key in both approving the deployment, funding, and staffing of each BPAT. Members of a BPAT generally include representatives from FEMA Headquarters and the FEMA Regional Offices (ROs); representatives from state and local governments; consultants who are experts in specific technical fields such as structural engineering, building design and construction, land use and floodplain management, and building codes; and other technical, administrative, and general support personnel.

A BPAT conducts field inspections and technical evaluations of the performance of buildings subjected to forces generated by the event. The primary purpose of the BPAT's technical evaluations is to identify design practices, construction methods, and building materials that either failed under the forces generated by the event or were successful in resisting such forces. In addition, the BPAT will often look at land use management and planning practices as well as natural hazard identification and risk assessment. This is done in an effort to learn whether actions, other than those involved in designing and constructing buildings, were successful in minimizing damages from natural hazards. One of the major objectives of the BPAT is to provide recommendations that can help reduce future damage from natural disasters. The BPAT's findings and recommendations are aimed primarily at construction contractors, architects, engineers, planners and those local building officials who are involved in permitting, inspection, and development of building codes, as well as floodplain and land use management provisions. Recommendations generally focus on improvements in local building design, construction, and land use, as well as the enhancement and improved enforcement of local building codes and floodplain and land use management provisions. Usually, the culmination of the BPAT's efforts is a report that presents the team's observations, conclusions, and recommendations for improving building performance in future natural disasters.

The Program Assessment and Outreach Division's Technical Support and Engineering (TS/E) Contractor supports the BPAT Program. This contractor plays a pivotal role in ensuring the FEMA is capable of deploying a BPAT anywhere in the United States within 48 hours following a major disaster. To accomplish this task, FEMA BPAT program personnel and the TS/E Contractor monitor weather and other conditions that may lead to a major disaster and maintain a sufficient state of readiness to deploy as necessary. As part of the

BPAT Program, the TS/E Contractor maintains a BPAT Roster that includes information on hundreds of natural hazard mitigation specialists. These specialists have a broad range of expertise and are from all across the United States. Each specialist has agreed to serve on a BPAT, if called upon.

To make the BPAT process an integral part of disaster response and hazard mitigation activities, FEMA has developed this *BPAT Standard Operating Procedure (SOP)*. This SOP is a proactive and comprehensive approach to the planning, pre-deployment, deployment and field assessment, and post-deployment functions of a BPAT. Under this approach, whenever possible, the process for determining the need for assembling and deploying a BPAT begins well in advance of the disaster event itself, and the potential members of the BPAT will have already been identified, qualified, and placed on “standby” for deployment by FEMA. To consistently meet these objectives, and to address the need for coordination among the Federal, state, local, and private entities that may be called upon to serve on a BPAT, FEMA has developed this SOP. This plan describes the major components of the BPAT process, from pre-disaster planning activities, through deployment of BPATs, to the final report preparation and post-disaster followup activities. Because the needs of FEMA, the state, and the local government may vary from one disaster to another, and because FEMA will continue to gain experience with the BPAT process, this SOP will be regularly evaluated and improved/updated as necessary.

The information presented in the SOP is organized according to the major phases of the BPAT process. The BPAT process consists of three major phases that are as follows:

- pre-deployment
- deployment and field operations
- post-deployment

The operations described in this document are designed for responses to both disasters for which FEMA has enough warning time to carry out the pre-event activities and those disasters that occur with little or no warning. Hurricanes, such as Opal, which occurred in 1995, and Georges, which occurred in 1998, are examples of disasters which struck with considerable warning. Earthquakes and tornadoes are examples of disasters that can cause devastation with little or no warning.

# **1. Introduction**

## **1.1 Background**

Among the activities that the Federal Emergency Management Agency (FEMA) carries out in response to natural disasters caused by events such as floods and hurricanes is the deployment of Building Performance Assessment Teams (BPATs). These teams are formed by and operate under the direction of the Mitigation Directorate's Program Assessment and Outreach Division, which is located at FEMA Headquarters (HQ). While the BPAT program is managed from FEMA HQ, Regional Office, Disaster Field Offices (DFO), and Regional staff play a key in both approving the deployment, funding, and staffing of each BPAT. Members of a BPAT generally include representatives from FEMA Headquarters and the FEMA Regional Offices (ROs); representatives from state and local governments; consultants who are experts in specific technical fields such as structural engineering, building design and construction, land use and floodplain management, and building codes; and other technical, administrative, and general support personnel.

Under the direction of a BPAT Team Leader (TL) from FEMA's Mitigation Directorate, a BPAT conducts field inspections and technical evaluations of the performance of buildings subjected to forces generated by the event. The primary purpose of the BPAT's technical evaluations is to identify design practices, construction methods, and building materials that either failed under the forces generated by the event or were successful in resisting such forces. In addition, the BPAT will often look at land use management and planning practices as well as natural hazard identification and risk assessment. This is done in an effort to learn whether actions, other than those involved in designing and constructing buildings, were successful in minimizing damages from natural hazards. One of the major objectives of the BPAT is to provide recommendations that can help reduce future damage from natural disasters. The BPAT's findings and recommendations are aimed primarily at construction contractors, architects, engineers, planners and those local building officials who are involved in permitting, inspection, and development of building codes, as well floodplain and land use management provisions. Recommendations generally focus on improvements in local building design, construction, and land use, as well as the enhancement and improved enforcement of local building codes and floodplain and land use management provisions. Usually, the culmination of the BPAT's efforts is a report that presents the team's observations, conclusions, and recommendations for improving building performance in future natural disasters.

## **1.2 Purpose**

To make the BPAT process an integral part of disaster response and hazard mitigation activities, FEMA has developed a proactive and comprehensive approach to the planning, pre-deployment,

deployment and field assessment, and post-deployment functions of a BPAT. Under this approach, whenever possible, the process for determining the need for assembling and deploying a BPAT begins well in advance of the disaster event itself, and the potential members of the BPAT will have already been identified, qualified, and placed on “standby” for deployment by FEMA. To consistently meet these objectives, and to address the need for coordination among the Federal, state, local, and private entities that may be called upon to serve on a BPAT, FEMA has developed this Standard Operating Procedures (SOP) plan. This plan describes the major components of the BPAT process, from pre-disaster planning activities, through deployment of BPATs, to the final report preparation and post-disaster followup activities. This operations plan is titled the “Standard Operating Procedures for Building Performance Assessment Team Process”. Because the needs of FEMA, the state, and the local government may vary from one disaster to another, and because FEMA will continue to gain experience with the BPAT process, the SOP will be regularly evaluated and improved/updated as necessary.

The information presented in the SOP is organized according to the major phases of the BPAT process. The BPAT process, as currently defined, consists of three major phases and two major support functions. The three major phases of the BPAT process are as follows:

1. pre-deployment
2. deployment and field operations
3. post-deployment

The two major support functions include:

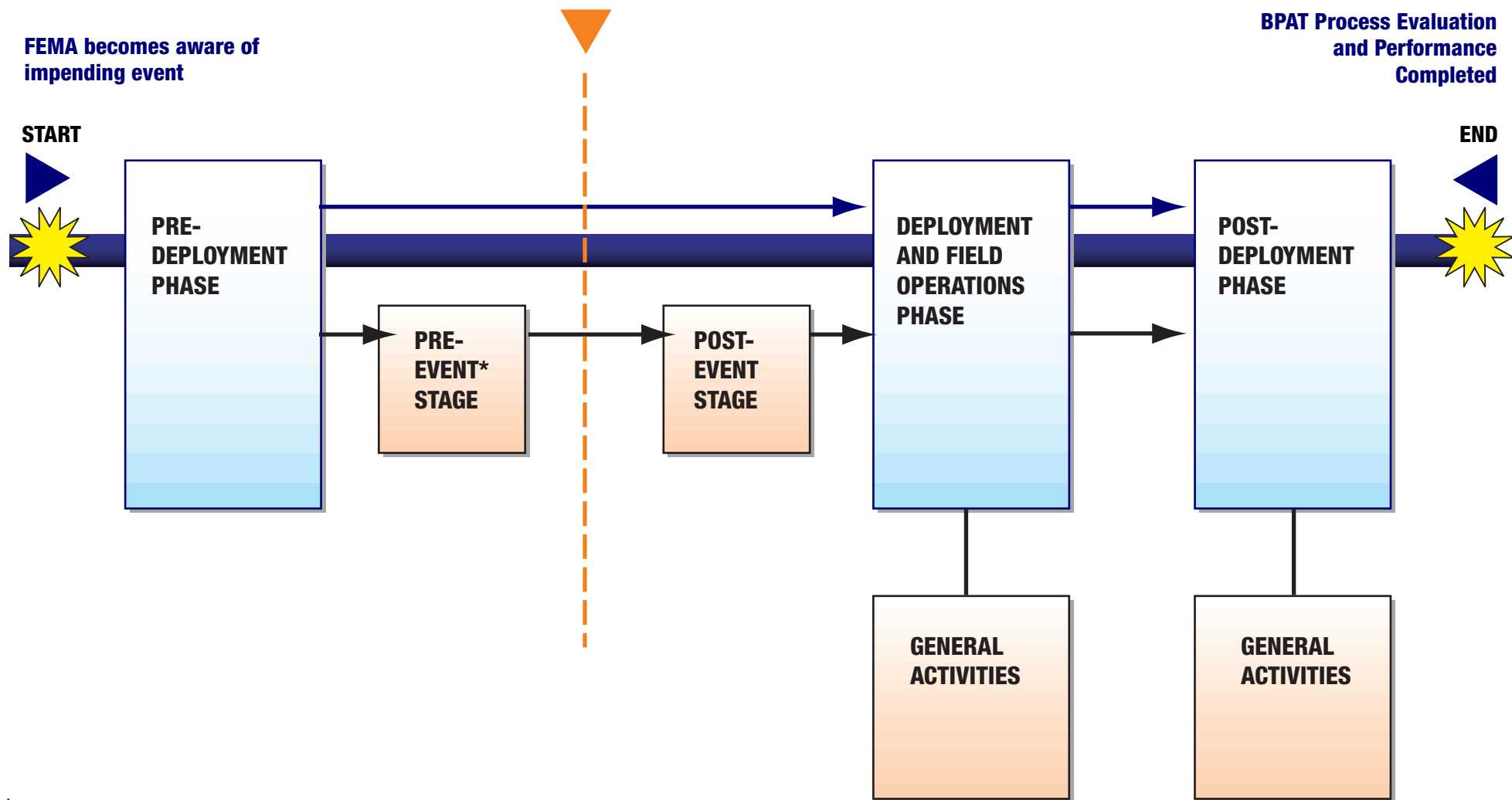
1. general support and guidance
2. report preparation and guidance

The major phases of the BPAT process are discussed in Sections 3 through 5, and the major support functions are discussed in Sections 6 and 7. The typical BPAT process is illustrated in Figure 1. Definitions of terms used in this document are provided in Appendix D.

The operations described in this document are designed for responses to disasters caused by short-term events for which FEMA has enough warning time to carry out the pre-event activities described in Section 4. Hurricanes, such as Opal, which occurred in 1995, and Georges, which occurred in 1998, are examples of this type of event. In responding to long-term events, such as the flooding in North Dakota during 1996, and to events that occur with little or no warning, such as earthquakes and tornadoes, users of this manual should proceed immediately to [Section 5](#).



# Typical BPAT Process



\* When a disaster occurs with little or no warning, certain pre-event activities will have to be performed as soon as possible during the post-event stage.

## **2. FEMA Logistics**

### **2.1 Background**

The President may declare a national disaster when the states and local communities cannot by themselves adequately respond to the impacts from a natural disaster. The President's authority to provide assistance to communities and states for natural disasters comes from "The Robert T. Stafford Disaster Assistance and Emergency Relief Act" (Stafford Act). One of the actions the President may take under the Stafford Act is to directly provide technical assistance through the use of Federal agencies. The BPAT is part of the technical assistance that may be provided.

### **2.2 Roles of Key FEMA Personnel**

#### **Deputy Federal Coordinating Officer for Mitigation (DFCO-M)**

The authority of the President is delegated to the Federal Coordinating Officer (FCO) who is in charge of coordinating Federal, state, community efforts in the disaster area. Depending on the magnitude of the disaster, the FCO will have deputies to handle specific areas of responsibility. One of these is normally the DFCO-M. In most disasters, the FCO and DFCO-M are selected from Regional Staff. In catastrophic disasters, these positions may be staffed, temporarily, with FEMA HQ staff. The DFCO-M, in consultation with Headquarters Mitigation staff, will request that a BPAT be deployed to a disaster area. The final decision to activate the BPAT program rests with the Mitigation Directorate at FEMA HQ.

In addition to the being involved in the decision to deploy a BPAT, the DFCO-M must ensure that funds are placed in the appropriate account to fund the BPAT deployment. This process is called a *Request for Allocation Advice*. Presently, this allocation of funds is accomplished through FEMA's automated disaster management systems called the National Emergency Management Information System, better known as NEMIS.

#### **Technical Services Branch Chief**

In larger disasters, often a Technical Service Branch will be established within the DFO. When this occurs, the DFCO-M often delegates most issues concerning BPAT to the Technical Services Branch Chief. In situations where this occurs, the BPAT will work directly with this individual, in lieu of the DFOC-M.

### **The BPAT Project Officer (PO)**

The BPAT Project officer is directly involved in the decision as to whether to activate the BPAT program. In the event that a decision is made to activate the BPAT program, the BPAT Project Officer must prepare three documents that include, a BPAT task statement-of-work (SOW), a government estimate, and a *Requisition and Commitment for Services and Supplies* (FEMA form 40-1).

### **Budget Analyst**

The Budget Analyst, within the Office of Financial Management's (OFM) Financial Planning and Analysis Division must certify on the 40-1 that funds are available.

### **Contract Specialist**

The Contract Specialist, within the OFM's Fire, Flood, and Mitigation Acquisition Division will transmit the SOW to the Technical Support and Engineering Contractor (TS/E Contractor) so that a cost proposal can be developed. After receiving the cost proposal, the Contract Specialist will conduct negotiations with the TS/E Contract to award the task.

### **Contracting Officer (CO)**

Because of the urgency of deploying the BPAT in a timely manner, the Mitigation Directorate will normally ask the Fire, Flood, and Mitigation Acquisition Division to issue a verbal authorization to incur expenses to the TS/E Contractor. The Division Director of the Fire, Flood, and Mitigation Acquisition Division, acting in their capacity as the Contracting Officer may issue a verbal to authorization to incur expenses to the TS/E Contractor until the final task order is awarded.

### **BPAT Team Leader (TL)**

The BPAT Team Leader (TL) will always be a full-time employee of FEMA. In most cases, the team leader will be selected from the technical staff from Mitigation Directorate at FEMA HQ. The TL may or may not be the BPAT Project Officer. The TL shall be the task monitor and have the authority to lead the team's efforts within the scope of work for the BPAT deployment.

**BPAT Regional/DFO Representative**

BPAT Regional/DFO Representative is selected by the DFCO-M to act as the liaison among the BPAT and the DFO, the Regional Office, and the affected states and communities. The Regional/DFO Representative coordinates all activities related to these entities. This includes notifying state and local officials of the upcoming movement of the BPAT, attempting to include state and local representatives on the BPAT, and attempting to arrange for meetings with state and local officials.

**BPAT Media Affairs Liaison**

A BPAT Media Affairs Liaison is selected by the DFO Public Information Officer to act as the liaison between the BPAT and media relations staff in the DFO and the media. All media contacts are referred to the Media Affairs Liaison.

### **3. BPAT Process Support Activities**

FEMA has recognized that it must implement ongoing preparedness activities to support the BPAT process. These activities will help FEMA, other government representatives, and the TS/E Contractor and its subcontractors carry out and support FEMA's mitigation and recovery efforts. The support activities identified for development by FEMA, for which standard operating procedures have been and continue to be developed, include the following:

- Developing and maintaining a national roster of local and other technical experts who have agreed to be available to serve as members of or advisors to a BPAT ([See www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat)).
- Establishing contractual or cooperative agreements with individuals, firms, model building code groups, and/or other agencies whose services are likely to be called upon to support the BPAT process ([See Section 4.1.5](#)).
- Developing guidelines for the BPAT members concerning (1) responding to requests in the field for interviews with the news media and (2) addressing the general public when conducting field inspections.
- Establishing policies and guidelines that address the need for confidentiality in dealing with the BPAT's preliminary findings, especially during the development of the BPAT report.

The activities listed above will increase the effectiveness of the building performance assessment process and improve FEMA's preparedness and deployment activities.

#### **3.1 National Roster/Database of Local and Other Technical Experts**

The effectiveness and credibility of a BPAT are greatly enhanced when the team includes members who have one or more of the following:

- Expertise in an appropriate technical area (e.g., structural engineering, building construction, code development).
- A strong knowledge of local construction practices and building codes (local, state, and national).
- Specific expertise regarding the potential hazards (e.g., wind, coastal flooding, earthquakes) in areas where the BPAT is likely to be deployed.
- Knowledge of FEMA's major programs (e.g., National Flood Insurance Program, Hazard Mitigation Grant Program under Section 404 of the Stafford Act).

The TS/E Contractor does not wait until a disaster has occurred to identify and secure the services of the required experts. Instead, as part of its ongoing disaster preparedness and technical assessment activities, the TS/E Contractor establishes and maintains an evolving roster/database of local and national experts (e.g., individual consultants, academicians, local and state representatives) who are qualified to serve as members of BPATs. Information received from FEMA and the RO staff concerning qualified local experts is continually added to this BPAT database as appropriate. The experts included in the BPAT database have a wide range of technical expertise in such disciplines as structural engineering, architecture, building construction, building codes, geotechnical engineering, construction cost estimating, residential floodproofing, building relocation, and building elevation. Refer to [www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat) for additional information.

### **3.2 Contractual Agreements**

Contractual agreements are the means by which the TS/E Contractor secures the services of profit-making individual consultants who provide technical expertise and logistical support during the BPAT process. When a disaster occurs, conflicting demands may compete for these services; therefore, it is important that the TS/E Contractor already have commitments from the necessary consultants. Having such commitments in the form of contractual agreements ensures that the necessary services will be provided when needed and benefits all parties by defining the services and documenting any special requirements anticipated. Because the specific duties of individual team members may vary according to disaster conditions, all agreements should be general, so that changes can be made as necessary.

### **3.3 Public Relations and Media Relations**

All disasters, especially those resulting in extensive damage to private and public property, present numerous challenges to FEMA in its efforts to respond to the immediate needs of communities and individual property owners. Among those challenges is responding to questions from the media concerning the nature and progress of FEMA's recovery activities.

The work of a BPAT, while providing long-term benefits in the area of hazard mitigation, may not be seen as beneficial to those more concerned with immediate relief. Also the findings of a BPAT, which address design processes, construction methods and materials, quality of workmanship by building contractors, and regulatory activities of local governments, may prove controversial in the emotionally charged atmosphere that follows a disaster. Under these conditions, there will always be a high potential for misunderstandings, misrepresentation, ill will, and negative publicity, any of which will hamper FEMA in its disaster recovery activities. For these reasons, it is particularly important that the BPAT members follow established guidelines

when contacted by representatives of the media. This is especially applicable while carrying out the highly visible field inspections/assessments.

All BPAT members are to refer all media inquiries to the BPAT Media Affairs Liaison. When in the field, a BPAT member may only respond to questions from the media when it is first cleared by the BPAT Media Affairs Liaison. Additionally, no field notes, logs, working papers, or draft documents may be released to the media without the expressed permission of FEMA. The release of any final written product must be first be approved by FEMA.

### 3.4 Confidentiality Requirements

The findings of the BPAT must be kept confidential throughout the entire BPAT process. BPATs include a variety of members with potentially different interests and allegiances. Some team members may be tempted to use the team's work-in-progress for their own purposes, which may or may not be consistent with FEMA's objectives. Also, the results of the BPAT process are documented in a series of draft reports issued for review and comment by the appropriate audience and not intended for general distribution. Therefore, FEMA has developed a mechanism for ensuring the confidentiality of the BPAT's findings called a *Confidentiality Agreement*. A sample Confidentiality Agreement is provided in [Appendix B](#).

All non-governmental members of a BPAT must sign confidentiality statements before participating on the team. These statements are included in all initial contractual and cooperative agreements entered into as part of ongoing preparedness activities and in any subsequent contracts and agreements entered into at the time the BPAT is formed. Signed confidentiality statements are also obtained from any logistical support personnel, outside vendors, and other peripheral parties involved in the BPAT process.

All draft versions of BPAT reports and all memorandums that transmit draft BPAT reports to authorized reviewers must include confidentiality notices. Limitations regarding the content of draft and final BPAT reports are based on the Privacy Act. No personal information (e.g., names, and telephone numbers) is to be included. In general, no information beyond the type released under the Freedom of Information Act should be included in either draft or final reports.

All draft versions of BPAT reports must include a title page on which the following statement appears in bold type:

**“This DRAFT report presents the preliminary findings of the BPAT. The observations, conclusions, and recommendations presented herein are subject to review and revision. They are therefore to be considered a work-in-progress and are not appropriate for general dissemination. This report is to**

**be provided only to those persons authorized by FEMA and is to be kept confidential by them.”**

All memorandums that transmit draft BPAT reports to authorized reviewers must include the following notice in bold type:

**“The enclosed report is a DRAFT issued only to authorized reviewers. It is not to be copied or disseminated, and its contents are to be kept confidential.”**

### **3.5 Field Safety**

As discussed in Sections 4 and 5, activities that occur both before and during BPAT deployment involve fieldwork at disaster sites. Working in and around damaged buildings entails hazards not usually encountered in other types of fieldwork. Also, damage to roads, telephone lines, and other infrastructure elements may make it difficult to obtain emergency medical treatment in the event of injury. Health and safety requirements (either explicit or implicit) in any contractual agreements between FEMA and the TS/E Contractor shall be adhered to by the TS/E Contractor and its subcontractors and consultants.

The responsibilities of the TS/E Contractor include identifying any OSHA, state and local health and safety requirements applicable to activities in the disaster area and providing those requirements to all personnel who will be performing field work in conjunction with the BPAT process. The TS/E Contractor shall normally provide OSHA-approved hard hats. Individual team members normally are required to provide adequate safety foot wear.

An additional consideration is that it may not always be possible for the team to obtain the property owner’s permission to enter and inspect a damaged building. Therefore, whenever possible, the local official serving as a member of the BPAT will be present during field operations. Having a local official present when entering a building without the owner’s permission may help the BPAT avoid problems regarding the legality of such actions. Additionally, it may help lessen the likelihood that property owners attempting to protect houses and their contents from looters and vandals will confront team members.

## **4. Pre-Deployment Phase**

The pre-deployment phase consists of those actions undertaken by FEMA after it determines that a disaster (such as a hurricane, storm, or riverine flood) is imminent but before a BPAT is deployed. The pre-deployment phase consists of two stages: the pre-event stage and the post-event stage. A typical BPAT process timeline is shown in Figure 2.

### **4.1 Pre-Event Stage**

Implementation of the pre-event activities described in this section, enables FEMA to anticipate potential disasters and be better prepared to respond effectively once a disaster has occurred. Identifying the resources that will be needed and planning for their acquisition will result in significant gains in operational efficiencies and effectiveness for FEMA's Mitigation Directorate, the ROs, and the affected communities. Activities conducted by FEMA staff and consultant contractors in the pre-event stage include the following:

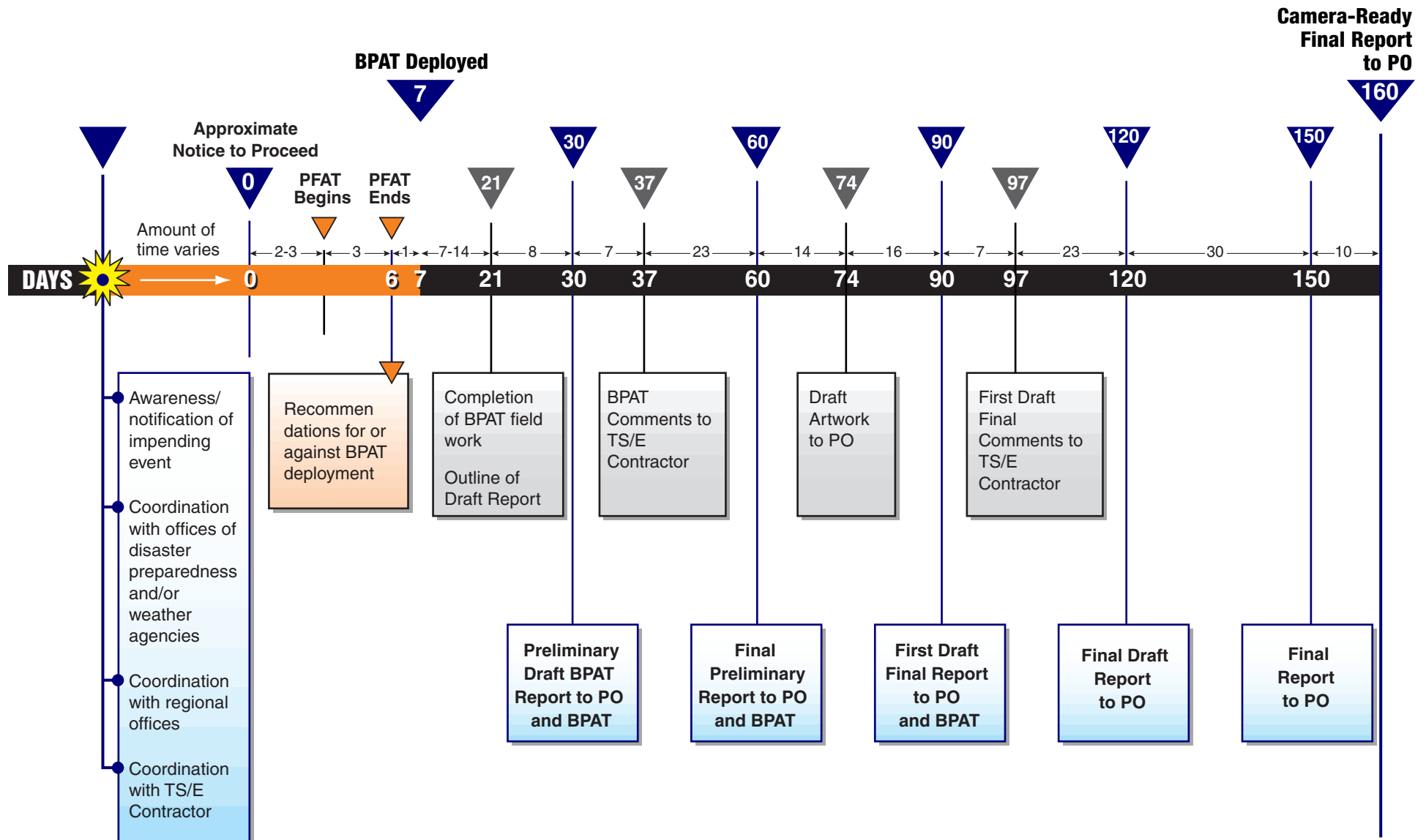
- early monitoring of impending storm/flood events and assessment of potential areas of impact
- early estimating of potential types and severity of damages
- early coordination with ROs
- early coordination with state and local officials
- early coordination with Technical Support/Engineering (TS/E) Contractor

Pre-deployment activities are funded through an annual allocation on non-disaster specific funds. This allows the TS/E Contractor to conduct pre-deployment activities without receiving a verbal authorization to incur expenses directly related to a specific disaster.

The activities listed above, which are described in Sections 4.1.1 through 4.1.5 can be carried out before an impending event only when FEMA has sufficient warning of the event. In responding to disaster-causing events that strike with little or no warning, such as earthquakes or tornadoes, FEMA will find that some activities, such as pre-event monitoring, are precluded. Other activities such as early estimation of damages, early coordination with regional offices and local officials, and early selection of technical experts, must be carried out as soon as possible after the event. Therefore, the following activities may be modified as dictated by disaster conditions and FEMA needs.



# Timeline of Typical BPAT Process



#### **4.1.1 Early Monitoring of Impending Storm/Flood Events**

Early monitoring of the progress of impending hurricanes or other major storms provides FEMA with the information it needs to make preliminary determinations concerning the following:

- the potential storm track and the areas that may be affected by the storm
- the type and magnitude of the hazards that may be generated by the event, e.g., high winds, wave action, flooding, beach erosion
- the projected storm intensity/return of the event

With this preliminary information, FEMA staff, in conjunction with the TS/E (Technical Support/Engineering) Contractor, may be able to anticipate the magnitude of the resulting damage. Then, using the BPAT database of local and other technical experts ([see Section 5.2](#)), FEMA and the TS/E Contractor can identify those experts who are in a position to quickly gather additional field information in the affected area.

Several sources of information are readily available to FEMA for keeping abreast of impending hurricane or flooding events. One such source is the news media. News reports and related information disseminated to the public by television, radio, or newspapers are useful, inexpensive means of tracking storm activities. Most newspapers are available on the Internet. However, it is important to note that information obtained from the news media may be inaccurate or incomplete.

When notified of an impending event that may result in a natural disaster, FEMA and its TS/E Contractor will monitor news coverage about that event. Several media sources should be consulted, including the major television networks such as ABC, CBS and NBC; the new networks such as CNN, Headline News, and C-SPAN, the Weather Channel; national radio networks; major newspapers and news publications; and, associated web pages. The primary objective of using the media is to stay abreast of changing event conditions.

Another primary source of information is the Internet. For hurricanes, a FEMA liaison at the National Hurricane Center provides FEMA with current weather forecasting and storm tracking information. This information is usually very reliable. For other events, weather service information is available on the Internet. For wind events, a web site can provide real-time weather information. For example, the National Buoy Data Center ([www.ndbc.noaa.gov](http://www.ndbc.noaa.gov)) is a valuable source of wave height and wind speed data for many offshore buoys. These and other web sites can be used to track hurricanes before they make landfall on the United States. Other sites such as [www.gobeach.com/hurr.htm](http://www.gobeach.com/hurr.htm)

allow private parties and government officials on certain Caribbean Islands to post information on the damage specific to these areas. For example, during Hurricane Georges, this information included eyewitness accounts of damage from the storm, which was used to help assess some of the damage to Puerto Rico and the U.S. Virgin Islands.

#### **4.1.2 Early Estimation of Potential Types and Severity of Damages**

With information about the types of construction in the potentially affected area and the nature and magnitude of the expected hazards, FEMA may be able to estimate the extent of the possible damage and draw preliminary conclusions about the need to deploy one or more BPATs. These efforts require extensive coordination with the RO.

Typically, FEMA deploys BPATs when it believes that the conclusions drawn from field observations will support design, construction, and inspection recommendations of national significance. For example, the BPAT deployed in response to the Oklahoma City bombing investigated the reciprocal benefits of blast-resistant design and earthquake-resistant design, an issue with potential significance for the design of critical facilities nationwide. In 1999, a BPAT was deployed to study the tornado damage in Oklahoma and Kansas to provide technical assistance in the rebuilding of the communities by implementing “safe-rooms” and other wind-resistant construction practices. For hurricanes, a BPAT is usually deployed for those storms classified as a Category 3 or stronger on the Saffir-Simpson scale.

#### **4.1.3 Early Coordination with FEMA**

The Project Officer (PO) is a member of the FEMA Mitigation Directorate staff in Washington DC. The Team Leader (TL) is normally also from FEMA HQ in Washington DC. The BPAT Project Manager (PM) is a member of the TS/E Contractor staff who has been approved by the PO; the PM is responsible for all support services provided to the Mitigation Directorate by the contractor and its subcontractors. The BPAT Team Manager (TM) is a member of the TS/E Contractor staff who has been approved by the PO. The TM is responsible for managing the day-to-day operations of the BPAT, including logistical issues. The PO and the TL may be the same person; the PM and the TM may be the same person. In the early stages of a disaster, the PM, or their designee, is responsible for early coordination with FEMA.

Early coordination among the PO, TL, PM, TL and RO responsible for the potentially affected area establishes lines of communication that will be essential throughout the BPAT process. This coordination also allows FEMA to determine the availability of regional staff and resources that will be needed during all phases of the BPAT process.

#### **4.1.4 Promoting State and Community Participation in the BPAT Process**

FEMA's coordination with state and local officials is carried out through the RO (and the DFO, when appropriate) and begins during the pre-event stage, if possible, in the pre-deployment phase. State and community participation is essential to the success of the BPAT. It is the responsibility of the RO Representative to work through the RO and DFO to secure the participation of state and community representatives. This coordination serves several purposes:

- It helps assure community officials that FEMA is ready and willing to provide technical assistance.
- It provides a means by which FEMA staff can explain the BPAT process, its objectives, and its benefits.
- It enables FEMA staff and community officials to begin planning for the involvement of local and state government officials, if possible, in the post-event stage.
- It assists the RO and the DFO in providing any media support personnel to assist the BPAT.

#### **4.1.5 Early Coordination with the Technical Support/Engineering Contractor**

Coordination between FEMA's Mitigation Directorate and the TS/E Contractor allows FEMA to identify key personnel and to determine their availability and assignments. Pre-event coordination equips FEMA with the information it needs to quickly select BPAT members and other participating personnel and to begin planning for activities that will be necessary after the disaster occurs. The TS/E Contractor can inform FEMA of additional resources that may be available and that may be called upon when necessary.

Initial coordination with local and other experts also enables FEMA staff (supported by the TS/E Contractor) to make final selections of experts who can participate in the activities carried out post-event or who can serve as members of the BPAT, if deployment is necessary. The BPAT database contains a detailed list of experts who have been previously qualified to support such efforts ([see Section 5.1](#)) is used by FEMA and the TS/E Contractor, as appropriate.

For example, before landfall of a major hurricane (Category 3 or high on the Saffir-Simpson Scale), FEMA's PO or TL contacts the TS/E Contractor and authorizes them to begin preparing for a BPAT. The PO usually gives the TS/E Contractor a list of skill classifications for potential team members (e.g., structural engineer, wind engineer, architect, technical writer). The TS/E Contractor will then query the BPAT database to

find appropriate people and will contact them to inquire about their availability. The TS/E Contractor then submits a list of names and corresponding resumes to FEMA for approval. From that list, a standby team is selected. The TS/E Contractor will then contact the BPAT members and tell them of their status.

Usually, potential BPAT members will have many questions after they have been selected for the possible BPAT. A Pre-Deployment Package ([Appendix A](#)) has been created to answer some of these questions.

Pre-event activities include initial coordination with the previously identified local technical experts, who are chosen for their expertise. Local technical experts are chosen for their intimate knowledge of local hazards and construction practices, and their strategic location in or near the expected damage area. Local experts are in a position to help FEMA assess potential damage and draw preliminary conclusions about the type and value of the technical information that could be gathered by a BPAT. During severe storms, communicating with local technical experts is usually difficult because they are busy fulfilling the duties of their jobs and preparing their home and families for the impending storm.

In addition to coordinating with experts in the potentially affected area, FEMA coordinates with other experts who may not be in that area but who can contribute essential knowledge and skills. Such experts would include members of Federal, state and regional agencies; model building code and professional organizations; and building and construction industry groups. For example, before Hurricane Georges made landfall on Puerto Rico, FEMA consulted an expert on construction in Puerto Rico to determine the expected damages to residential construction.

When warning time is sufficient, FEMA also investigates the possibility of obtaining pre-event aerial videography or aerial photography of the area that may be affected by the impending event. Pre- and post-event low-altitude aerial videography or photography can provide an excellent basis for “before-and-after” comparisons of damaged buildings and can be useful in the assessment of storm impacts. Digital videography tied to the Global Positioning (GPS) may yield excellent products for before-and-after comparisons. FEMA and/or the TS/E Contractor consult with local technical experts to determine the availability and cost of such services.

## **4.2 Post-Event Stage**

During the post-event stage, FEMA determines whether deployment of a BPAT is appropriate and, if so, what the composition and activities of the team will be. No deployment can occur until the President of the United States issues a disaster declaration. Several activities are associated with this stage:

- deploying a Preliminary Field Assessment Team (PFAT)
- assessing potential logistical needs of the PFAT and BPAT
- determining the composition of the BPAT
- assessing hazards to BPAT members
- assessing the information needs of affected communities

As noted previously, when a disaster event occurs with little or no warning, many of the coordination activities described in Section 4.1 will have to be carried out as soon as possible after the event. This is especially true for any coordination necessary for forming and deploying a PFAT (see Section 4.2.1). It should also be noted that the procedures for carrying out the standard post-event activities can be affected by the duration of the event. For short-term events, such as a hurricane, it may be necessary to conduct a single PFAT and to assess hazards and special needs only one time prior to the formation of the BPAT. For longer-term events, such as extended periods of flooding, it may be necessary to follow up with new assessments as field conditions change. When there is no warning, such as a tornado or earthquake, there will usually be no PFAT deployment.

### **4.2.1 Deploying a Preliminary Field Assessment Team**

The PFAT conducts the first field inspection. It is performed on a macro scale by a small team usually consisting of (1) a FEMA Mitigation Directorate representative and/or an RO representative acting as the TL, (2) a local expert and/or local official, and (3) a TS/E Contractor representative, who is usually the proposed BPAT TM. The purposes of the PFAT is to further refine FEMA's initial estimates of the types and extent of damage and the value of the information likely to result from deployment of a BPAT. The assessment also helps FEMA verify and, if necessary, revise its original operations plan.

The PFAT must quickly obtain a broad picture of the amounts and types of damages that have occurred. The objective of the PFAT is to recommend whether or not a BPAT should be deployed and what the composition of the team should be.

Once deployed, the PFAT quickly collects information on the damage, including joint FEMA-state preliminary damage assessments. Field and/or aerial assessments are used collectively with other existing data in the determination of a BPAT. FEMA has

developed a draft checklist which the TL has the option of using as a guide for conducting the PFAT ([Appendix C](#)). This checklist provides an organized and objective method for recording information on types of damage, distribution of damage, building successes, basis for deploying/not deploying a BPAT, required BPAT expertise, and potential BPAT field hazards.

Aerial assessments can be crucial to determining the extent and type of damage incurred. The U.S. Army Blackhawk helicopter is perfectly suited for conducting such assessments because it has six seats that provide an excellent view. After this rapid assessment has been completed, the PFAT meets with both FEMA and state representatives to report observations and make recommendations concerning the deployment of a full BPAT.

The magnitude of the event, the size of the affected area, and the extent of damage are important considerations in the determination of whether to deploy a BPAT and what the composition of the team(s) should be. The primary consideration, however, is whether the information a BPAT would provide will be valuable for FEMA's hazard mitigation and loss reduction activities on a national level. Therefore, proper identification of the types of damage is of particular importance. If, based on the results of the PFAT, FEMA expects that conclusions regarding the reasons for specific types of damage will lead to nationwide improvements in building methods and materials or in local regulatory activities, then deployment of a BPAT is worthwhile. A BPAT would also be worthwhile if its findings are likely to help FEMA assess the success of past mitigation activities.

The TL must brief the DFCO-M on the PFAT's findings and recommendations as to whether a BPAT should either be deployed or not be deployed. The TM will ensure that the TL has the necessary information and presentation materials to conduct this briefing. A final decision to deploy a BPAT rests with the DFCO-M, PO, TL, and the Mitigation Directorate management at FEMA Headquarters.

#### **4.2.2 Assessing Potential Logistical Needs**

If a BPAT is to be deployed, the TM uses the information provided by the PFAT to develop a checklist of the BPAT's potential logistical needs and establishes a schedule for meeting those needs. In establishing the schedule, the TS/E Contractor takes into account the effects of the disaster on the availability of local equipment and supplies and on the local infrastructure. The logistical needs of the BPAT may include the following:

- communications equipment, including mobile telephones and pagers
- computer equipment, including laptop computers and printers
- specialty equipment such as GPS technology, mapping software

- rental cars, including vans and 4-wheel-drive vehicles
- office space, including access to copiers, fax machines, and telephones
- aerial assets – helicopter or light plane
- conference room
- proper identification, such as FEMA badges and shirts
- digital cameras and video cameras
- protective gear, such as a hardhat

The Pre-Deployment Information Package ([Appendix A](#)) answers questions frequently asked by potential BPAT members regarding logistical needs.

FEMA will also consult with local officials regarding the availability and applicability of digital data for use in automated systems (e.g., GIS, CADD) if necessary. Custom applications of such data and systems can greatly enhance the efforts of the BPAT and could prove useful in the preparation of the BPAT report.

### **4.2.3 Determining the Composition of the BPAT**

To fulfill its mission, a BPAT must include members with the knowledge and skills necessary to identify the specific areas where the performance of buildings should be assessed to determine the causes of both successful performance and failure of the buildings and make recommendations regarding construction methods and materials, building codes, and local regulatory activities. These requirements largely define the typical composition of a BPAT. The structure and organization of the team must be such that the team will work efficiently and effectively and that the necessary interaction takes place among FEMA HQ, the RO, the DFO, state and local governments, other Federal agencies, and private entities.

The TL, RO, DFO, and TM will discuss the composition of the BPAT. If necessary, potential members will be added and deleted from the BPAT. It is the responsibility of the TS/E Contractor to inform potential BPAT members whether or not they will be deployed as part of the BPAT and to answer any logistical questions. If additional expertise is needed, the TL and the TS/E contractor (usually the TM) will work together to find acceptable BPAT members. The TS/E Contractor tells the BPAT members when and where to meet once the meeting date has been determined.

The BPAT includes not only those members who will conduct the field inspections but also the person(s) who will ensure that the proper coordination takes place within FEMA and among all of the involved agencies. Usually, a BPAT is composed of the following:

- Team Leader (TL) – a member of FEMA’s Mitigation Directorate who works on site and participates in the field inspections, who may also be the PO.
- Team Manager (TM) – a technical person from the TS/E Contractor, who works on site and participates in the BPAT’s field inspections.
- Regional Office Representative (RO)– a member of FEMA’s Regional Office who acts as the DFO Liaison through which the TM works with this FEMA representative to gain access to sites and locate field work sites.
- Local government representatives – officials such as emergency management official, code or permitting official, floodplain administrator, municipal planner, or municipal engineer.
- State government representatives – at the option of the state, officials such as state representatives from emergency management, building codes, land use planning, or floodplain management.
- Representatives of the TS/E Contractor’s technical consulting team such as structural engineers, environmental engineers and scientists, technical writers, and support contractors who will work on site and participate in the field inspections.
- Technical Writer – a person provided by the TS/E Contractor that shall be responsible for working on field documentation, production of the BPAT Daily Diary entry, the developing an outline of the BPAT Preliminary Report.
- Representatives of FEMA Headquarters with pertinent BPAT skills.
- FEMA media affairs liaison.

In some circumstances, the PO may also serve as TL. If the PO does serve as the TL, an alternate PO, who remains at FEMA Headquarters, will be designated by the PO, and the CO will be officially notified of that arrangement as soon as possible.

The complete process for the effective deployment and operation of a BPAT is complex. Throughout all the phases and functions of a typical BPAT process, extensive communication and coordination must occur among FEMA Headquarters, the ROs, the DFO, the TS/ E Contractor and its local technical experts and consultants, the state and community officials, private professional organizations, and other Federal officials. As a result, FEMA and its support groups must constantly be aware of the various lines of communication that are open during the BPAT review process. FEMA will identify

organizational planning and coordination requirements before activation of a BPAT. These requirements will identify all the lines of communication that need to be maintained as well as the responsibilities of each of the entities involved in the BPAT.

#### **4.2.4 Promoting State and Community Participation in the BPAT Process**

As emphasized in Section 4.1.4, FEMA's coordination with state and local officials is essential to the success of the BPAT. It is the responsibility of the RO Representative to work through the RO and DFO to secure the participation of state and community representatives. During the post-event stage, the RO and DFO will attempt to secure the participation of state and local officials. Often after major disasters, states and communities are overwhelmed and find it difficult to participate in BPATs during the field deployment phase. In these cases, the TM and TL will work with the RO and DFO to ensure that state and community representatives participate, at a minimum in the BPAT report review process as described in [Sections 6](#) and [7](#) of this document.

#### **4.2.5 Assessing Hazards to BPAT Members**

In anticipation of the need to deploy a BPAT, the PFAT members note during their field work any hazards that members of a BPAT may encounter. Such hazards include buildings made unsafe by the damage incurred, contaminated sediments deposited by floodwaters, toxic chemicals released as a result of damage, and damage to the local infrastructure (e.g., roads, communications networks) that would make it unusually difficult to obtain emergency medical treatment if necessary.

**Because access to medical supplies may be restricted, BPAT members MUST bring adequate supplies of all required prescription and other medication.** Additionally, BPAT members should be aware that travel to areas of the Caribbean such as Puerto Rico and the U.S. Virgin Islands may be necessary. The Center for Disease Control and Prevention web site is used by the TS/E Contractor as a source for immunization information ([www.cdc.gov/travel](http://www.cdc.gov/travel)).

Other potential hazards could include security issues such as restricted access or curfews to areas where inspections are necessary and encounters with homeowners attempting to protect their properties. Information about these and other hazards assists FEMA in its planning, development of operational guidance, and deployment of a BPAT.

## **5. Deployment and Field Operations Phase**

The deployment and field operations phase begins immediately after the decision is made by FEMA to deploy a BPAT. As in the pre-deployment phase, several activities are carried out concurrently to ensure the effectiveness of the BPAT process. These activities include developing logistical implementation schedules such as aerial assets for flyovers, defining field organizational assignments and responsibilities, establishing field coordination and reporting requirements, and identifying coordination activities required between the BPAT.

### **5.1 Major Objectives of a BPAT**

FEMA's goal in deploying a BPAT is to obtain information that can be used to reduce damage to buildings in future disasters. The information collected by a BPAT serves as the basis for conclusions regarding the failures or successes of buildings subjected to forces such as those from high winds, flooding and wave action. These conclusions address building design, building materials and methods, construction workmanship, building codes, land use planning, hazard identification, and local inspection and regulatory activities. From conclusions concerning building failures and successes, FEMA formulates recommendations for needed improvements to building designs and construction materials, methods, and processes that may have application in areas broader than those affected by a specific disaster. For example, these recommendations would apply in areas where similar types of buildings may be subject to similar hazards. To provide the necessary technical information and develop sound recommendations, the BPAT must be able to conduct its work in a rapid, thorough, and organized fashion and must clearly document its findings.

### **5.2 BPAT Operations**

The following sections discuss the activation and deployment of a BPAT, BPAT field inspections, documentation, and reporting.

#### **5.2.1 Activation and Deployment**

If FEMA determines from the findings of the PFAT (or without a PFAT) that deployment of a BPAT is necessary, FEMA selects the TL, who initiates the deployment activities of the BPAT. The TL, PO, RO representative, and the TM work together to carry out and coordinate all of the required activities for deploying the BPAT. Such activities may include issuing written authorizations to proceed (issued by the CO), developing preliminary schedules of performance milestones, identifying travel and meeting

requirements or restrictions, developing specific field operations guidance or requirements, and identifying logistical requirements.

Once the necessary activities are completed, the members of the BPAT are deployed. Once notified, the BPAT members should report to a FEMA- Disaster Field Office or disaster area within two days of FEMA's decision to deploy a BPAT. Once all BPAT members are at the designated site, the TM will meet with the entire BPAT and continue coordination activities with local officials and technical experts, and RO staff. Formal agreements among FEMA, the TS/E Contractor, the BPAT members, or any other agencies should be used and modified as necessary to ensure the commitment of the selected team members. The TM is responsible for the overall activities of the team. Under the supervision of the TL, the TS/E Contractor is responsible for the following:

- managing the efforts of its consultants and local technical experts
- verifying previous determinations regarding necessary logistical and other support services including securing ground transportation
- identifying and coordinating with persons or firms who can supply those services
- investigating the availability of and obtaining, as appropriate, office space, as well as digital data and/or software for use by the BPAT
- in a timely manner, ensuring the production of necessary interim products such as the daily BPAT Diary entries to be posted on FEMA's BPAT web site

From the information gathered in the pre-deployment phase and reported in the PFAT checklist, the TL and TM will, with the assistance of the RO, DFO, and local BPAT members, identify the areas where the BPAT field inspections are to be conducted; determine whether the team will operate as a single unit or break up into subteams; and develop an operations plan that identifies specific objectives, defines an inspection methodology, and establishes a schedule for accomplishing the necessary work. The TM then finalizes the plan for the team and when time permits, informs each team member, by telephone or e-mail, of his or her role and responsibilities. Copies of the plan will be delivered to the TL, PO, the RO representative and the DFCO-M. Any revisions to the plan resulting from changes in field conditions must also be put in writing and copies submitted to the PO and the TL.

A Pre-deployment Information Package ([see Appendix A](#)) with an accompanying Confidentiality Agreement ([see Appendix B](#)) is e-mailed to BPAT members as soon as they are approved to be on the BPAT team and the team is put on hold status. Those members who will be subcontractors to the TS/E Contractor usually receive their subcontractual agreements by e-mail. The package discusses a typical BPAT scope and

objectives and provides answers to some commonly asked questions. Once FEMA has authorized deployment of the BPAT, subcontractors must sign the contract and Confidentiality Agreement. All other members of the BPAT, except federal employees, must also sign the Confidentiality Agreement. In all cases, signed materials are to be returned to the TS/E Contractor promptly.

The use of subteams would be appropriate when the TL determines that doing so would enhance the efficiency and effectiveness of the BPAT process. The following are examples of situations in which the use of subteams might be appropriate:

- when the number of required site visits is so great, and when the team is large enough, that separate teams could be efficiently and effectively created and deployed to different areas
- when the types of building materials, methods, and/or damage are so varied, and when the depth of expertise included in the team is great enough, that subteams could be created according to expertise and deployed to sites with different conditions

### **5.2.2 Field Inspections**

Throughout the BPAT process, and especially during the field inspections, the need for a team approach is stressed. It is essential that the members of the BPAT work together toward the goals identified in the field operations plan.

In general, the fieldwork performed by the members of the BPAT consists of three major steps:

1. conducting field inspections
2. discussing observations, concerns, findings, conclusions and recommendations
3. reaching a consensus regarding the findings, conclusions and recommendations

### **5.2.3 Contacting Local Officials During Site Visits**

During the field deployment phase, the BPAT try to locate community officials while visiting individual communities in an attempt to enlist their assistance in better understanding local conditions and issues. This is especially true in those situations where the RO and/or DFO has been successful in securing the assistance of community official prior to the BPAT arriving on site. In the unlikely event that the assistance of a

community official can not be obtained, at a minimum, the TM will ensure that the names of local officials are collected so that they may be contacted during the BPAT report writing phase described in [Sections 6](#) and [7](#).

#### **5.2.4 Documentation and Reporting**

In addition to conducting the necessary field inspections, the BPAT documents its observations and reports the progress of its work to the PO and other interested parties.

Documentation is necessary because FEMA must maintain a comprehensive record that justifies the conclusions and recommendations resulting from the BPAT process. These conclusions and recommendations are eventually presented in both the Preliminary and Final BPAT reports ([see Sections 6](#) and [7](#)). Reporting is necessary because it is the TL's responsibility to coordinate the activities of the BPAT with other FEMA, Federal, state and local government operations and to ensure that adequate progress is being made toward meeting the goals of the BPAT specifically and the Mitigation Directorate generally.

Many of the damaged buildings visited by the BPAT will likely be repaired or reconstructed. Occasionally, repair and construction activities may be underway while the BPAT is conducting field operations. Because structural conditions may change while the BPAT is in the field, and because the team's observations are used as the basis for conclusions and recommendations for action by local government and the private sector, it is essential that the BPAT adequately document all observations in writing. Documentation activities generally include compiling field notes, obtaining copies of local documents (e.g. building codes), and posting daily updates of the BPAT diary, including photographs, on FEMA's web site. It may also be appropriate to include videotapes.

- **Field notes** – Each team member shall record his or her notes in the field, as observations are made. Where necessary, the notes shall be supplemented by sketches. Portable tape recorders may also be used; if they are, the tapes should be transcribed at the end of each day or as soon as practicable. The TM shall document in writing the results of the team members' discussion of their observations, including any preliminary conclusions.
- **Photographs** – A photographic record of the team's observations is required. The team must keep a complete record of the dates on which photographs are taken, the subject of each photograph, and any other information necessary to establish the relationship between the photographs and field notes.

Both standard 35mm cameras and digital cameras should be used.

- **35 mm Cameras** – All photographs to be presented in the final printed BPAT report should be taken with traditional 35 mm film cameras rather than digital cameras (see below). Slides, because of their versatility, are preferable to prints. Slides can be used directly in presentations, scanned for the creation of digital images to be imported into page layout programs, or used to produce prints as required.
- **Digital Cameras** – Currently, digital cameras with prices comparable to those of traditional film cameras do not produce images equal in quality to those produced by film cameras. In addition, digital cameras usually suffer from color shift and tend to produce flat images. Some digital cameras are further limited in that they rely on compressed file formats that result in additional losses of image quality. However, images from digital cameras do have a place in BPAT operations. They produce images of sufficient quality for on-screen display that can be viewed immediately, quickly uploaded to FEMA’s web site, and used for computer-based presentations (e.g., PowerPoint slide shows).
- **BPAT Daily Diary** –The TM is responsible for ensuring that the daily BPAT Diary entry is electronically transmitted to FEMA in a timely manner. Once transmitted the TM will work with the Mitigation Directorate’s Web Site Coordinator to ensure that the daily diary is posted FEMA’s BPAT web site ([www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat)) in a timely manner. Entries will begin upon the deployment of the BPAT and continue until the BPAT has completed its field assessment work and has been demobilized. A typical diary entry will contain a description of the day’s observations accompanied with a “Map-n-GO” locator map and digital photographs of the site.
- **Video** – Videotaping may be appropriate for documenting the team’s observations. However, although video is acceptable as a supplement to field notes and slides, it is not an acceptable replacement for them. Videotaping can be conducted only as approved by the TL through consultation with the TM.

The TM will provide a written report to the PO, PM, and RO representative, each week. The report will include the following information, at a minimum:

- a general description of the completed work
- an estimate, in percent, of the amount of work remaining to be completed by the team and an updated work schedule
- a description of special problems encountered, including the need for specialized technical support services not originally anticipated
- a summary of the team’s preliminary conclusions and recommendations
- a list of projected needs

### **5.2.5 Field Operations Close-Out Meeting**

After the field operations have been completed, but before the BPAT members leave the field, the TM will arrange a meeting of all BPAT members, usually in a conference room. The TL and/or the TM lead the meeting. A technical writer, provided by the TS/E Contractor, takes notes during the meeting and, if appropriate, records the meeting on tape. The purpose of the meeting is to discuss the following:

- a draft outline for the Preliminary Report
- preliminary conclusions and recommendations
- writing assignments for each of the BPAT members
- discussion and coordination among the BPAT members and the TS/E contractor regarding graphics for the report
- a schedule for reporting requirements for the BPAT
- general expectations of BPAT members over the next few months

## **6. Preliminary Report**

After the BPAT field operations process is completed, FEMA carries out followup activities to evaluate the effectiveness and efficiency of the entire effort, to evaluate the implementation of the technical recommendations made by the BPAT, and to monitor the state's and community's response to the information presented in the BPAT report.

### **6.1 Preliminary Report**

Within approximately 14 days after the final meeting, the TS/E Contractor prepares a draft preliminary report of the meeting and submits it to the TL and all BPAT members for review. At that time, the TM works with the TL to establish a schedule for completing the required actions identified in the meeting.

#### **6.1.1 Preparing Initial Draft Preliminary Report**

A technical writer on the TS/E Contractor's staff reviews the initial draft report outline and any graphic materials provided by the BPAT through the TL. At this time, if the TL and the BPAT have not already decided whether the established report standards are appropriate, the TM confers with the technical writer and coordinates with the TL to resolve this issue.

The technical writer then coordinates the production of the first draft of the preliminary report. This work includes the following activities:

- editing the text prepared by others, working with the TM to resolve questions, and, if necessary, writing missing sections of the report (e.g., Executive Summary)
- preparing the Table of Contents
- obtaining any necessary materials for inclusion in appendixes
- verifying that the necessary graphics materials, including captions, have been provided and that the necessary citations are included in the text.
- coordinating the production of the draft text
- reviewing graphics materials and coordinating the production of the report figures and cover by graphic artists

- identifying the need for graphic services from outside vendors for the final report (e.g., photographic processing, digital photographic and graphic production)
- compiling the completed draft preliminary report and making the necessary review copies
- if necessary, preparing a memorandum for signature by the TL that transmits review copies of the draft preliminary report to all reviewers

During the production process, the TM shall coordinate with the TL, as necessary, to resolve all issues regarding the production schedule, the need for outside vendors, and the distribution list for review copies of the draft preliminary report. The TS/E Contractor usually distributes the review copies.

### **6.1.2 Preparing Additional Draft Versions of Preliminary Report**

Once all review comments on the initial draft preliminary report are provided to the TL, the TS/E Contractor prepares a revised draft of the preliminary report. The revised draft includes all changes to text and graphics necessitated by the review comments. Copies of the revised draft are distributed to the original reviewers and to any additional reviewers identified by the TL.

The number of revised draft versions of the preliminary report required before the TL will determine the production of the final report. The TS/E Contractor then distributes the report as directed by the TL. The TS/E Contractor usually distributes all revised draft versions. As in the production of the initial draft, the TM shall coordinate with the TL to resolve issues regarding production and distribution of the report.

The Final Preliminary Report is not printed by a GPO contractor; it is usually copied in-house by either the TS/E Contractor or FEMA's Operations Support Directorate, Printing, Publications, and Graphics Division. In addition, the TS/E Contractor must provide the Final Preliminary Report in digital form, so that it can be made available to the public through the FEMA BPAT web site at [www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat).

## **6.2 Followup Activities**

The final BPAT report ([Section 7](#)) presents the finalized findings and recommendations of the team. These findings and recommendations concern primarily construction practices, including designs, methods, and materials; land use management practices; hazard identification; and local building code and other regulatory processes. Because the purpose of the report is to assist local officials,

construction contractors, architects, engineers, floodplain administrators, planners, and others involved in the land use management, building design, construction, and permitting process, FEMA may wish to evaluate the effectiveness of the information presented in the report. To make such an evaluation, FEMA may periodically monitor the implementation of the BPAT's technical recommendations among the local construction trades and/or monitor the community's regulatory response to the BPAT's findings and recommendations. Long-term monitoring of land use, construction and regulatory activities within the community may therefore be appropriate, especially during reconstruction after a disaster.

## **7. BPAT Final Report**

The primary product of the BPAT process is a final report that presents the observations, conclusions, and recommendations of the BPAT. Because the BPAT process and goals are generally consistent from one deployment to the next, FEMA has established standards for the content, organization, and format of the report. These standards are intended to make the production of the report efficient and to provide an effective product. When FEMA determines that a different type of report would better meet these objectives, deviations from the established standards are acceptable.

Production of the report is a cooperative effort. Individual members of the BPAT, FEMA staff, and representatives of the TS/E Contractor and its subcontractors are all expected to contribute to the report, initially and through the review process. The joint responsibilities of FEMA and the BPAT in the report preparation process are primarily decision making and coordination. These responsibilities encompass the following tasks:

- identifying the report audience
- verifying and, as necessary, revising the standards for report content, organization, and format
- determining the types and number of photos and graphics to be used
- establishing the production schedules
- identifying points of contact for coordination
- identifying report reviewers, besides those on the BPAT

Additional BPAT responsibilities include providing information (text, photos and graphics) for inclusion in the report and reviewing draft reports. The specific responsibilities of the various parties are described in Sections 7.1 through 7.5, as are requirements and responsibilities concerning the archiving of materials associated with the BPAT report and other aspects of the BPAT process.

### **7.1 Report Standards**

The standards presented in the following sections are based on previously prepared BPAT reports that have proved to be well suited to meeting FEMA's needs.

### **7.1.1 Organization and Content**

The body of a BPAT report consists of both text, photos and graphics. The major sections of the report and the order in which they appear are as follows:

- Executive Summary
- Introduction
- General Assessment/Characterization of Damages
- Field Observations
- Conclusions and Recommendations
- References
- Appendixes

**Executive Summary.** The Executive Summary usually consists of one to three pages of text. Graphics usually are not included. The purpose of the Executive Summary is to provide a broad overview of the BPAT's observations and conclusions and to list the most significant recommendations resulting from those observations. An introductory paragraph that provides background concerning the disaster and explains the roles of the BPAT is usually included.

**Introduction.** The introduction identifies the event that caused the disaster, briefly describes the disaster conditions, defines the BPAT, explains the BPAT's goals, states the purpose of the report, and introduces its contents. The Introduction may include graphics. Graphics used in the Introduction may include photographs of disaster conditions and illustrations such as maps of storm tracks and areas where the BPAT conducted ground and aerial surveys.

**General Assessment/Characterization of Damages.** This section summarizes the general types of damage observed by the BPAT (e.g., damage caused by flooding, high winds, or earthquake). Observed damage and mitigation successes are discussed in this section. More detailed descriptions of observed damage are included in the Field Observations Section.

**Field Observations.** This section explains how the BPAT carried out its field inspections and describes the team's observations. Depending on the approach used by the BPAT and the type and extent of the disaster, this section may be divided into subsections that address topics such as the types of buildings inspected (e.g., wood-frame, masonry), structural systems observed (e.g., roofs, wall openings), the causes of damage (e.g., wind, flood), and geographic areas in which the inspections were conducted. Conclusions based on the observations may also be included in this section.

**Conclusions and Recommendations.** The conclusions and recommendations presented in this section are based on the BPAT's collaborative evaluation of the observed building successes and damage. This section also presents technical guidance for mitigating damage from future storms. Like the Field Observations section, the Conclusions and Recommendations section can be subdivided according to building types, structural systems, causes of damage, and other categories. In some situations, it may be more appropriate to present conclusions and recommendations in separate sections.

## **7.1.2 Graphics**

The following sections discuss the preparation and presentation of graphics presented in BPAT reports. Graphics include photographs, tables, and illustrations.

### **7.1.2.1 Photographs**

BPAT reports use photographs primarily to depict disaster conditions and the BPAT's observations of building performance. Photographs in a BPAT report may be presented as, annotated to highlight important features, or combined with illustrations to clarify descriptions of building performance. Most, if not all, of the photographs used in BPAT reports are taken by team members to document observations in the field. As explained in [Section 5.2.4](#), photographs taken with traditional film cameras are preferred over those taken with comparably priced digital cameras. Either prints or 35 mm slides can be used.

Usually, the TS/E Contractor is responsible for scanning prints and slides to convert them to digital form for use in the selected page layout program. Decisions regarding scanning resolutions and file formats for photographs are made by the TS/E Contractor according to the specific needs of each report. As a general rule, standard 4" x 6" prints that are to be reproduced at their actual size or smaller should be scanned at a resolution of at least 300 dpi. Slides that are to be reproduced at 4" x 6" or smaller should be scanned at a resolution of at least 2,700 dpi. When enlargements will be made, higher resolutions will be necessary.

Photographs taken with digital cameras may be used when necessary, but the resulting printed images will usually not be as clear or have the same depth of color as those from scanned slides or prints. As noted in [Section 5.2.4](#), digital cameras that produce images only in compressed formats (e.g., jpg) should be avoided in favor of those that offer uncompressed formats (e.g., tif).

In some circumstances, FEMA may wish to incorporate photographs from other sources into BPAT reports. Such sources may include other FEMA reports as well as documents prepared by other Federal agencies, professional organizations, and private parties; newspapers; magazines; and Internet web sites. The TS/E Contractor is responsible for contacting the originator of the photograph to request permission to reproduce the photograph (for non-Federal sources) and obtain a suitable original or digital file. The TS/E Contractor is also responsible for advising the TL regarding the quality and usability of such photographs. When photographs from other sources are used, the source must be cited in the report. In general, photographs taken by other Federal agencies may be freely reproduced in FEMA publications, provided the source is cited.

### **7.1.2.2 Illustrations**

Illustrations in BPAT reports usually demonstrate failure modes and recommended improvements for design and construction practices and materials. Like photographs, illustrations in BPAT reports are usually reproduced in color. Illustrations are prepared by the TS/E Contractor and are often based on drawings made by the team members. In addition, illustrations in past BPAT reports or other FEMA documents may be used as is or modified as necessary. When existing illustrations from other FEMA documents are used, the TS/E Contractor is responsible for coordinating with the TL to obtain the source files.

If FEMA wishes to use illustrations prepared by others, the responsibilities of the TS/E Contractor are the same as those listed in [Section 7.1.2.1](#) for photographs from other sources.

### **7.1.3 Final Reports**

- Three final reports are produced:
  1. First Draft Final Report
  2. Final Draft Final
  3. Final Report

The First Draft Final Report is usually completed within 30 to 60 days after completion of the Preliminary Report. The First Draft Final Report should contain all text and as many graphics as possible that the TS/E Contractor feels should be included in the Final Report.

- When the First Draft Final Report is completed, it is submitted to the BPAT for comments. Comments are addressed by the TS/E Contractor and a Final Draft Final Report is usually produced within 30 to 60 days following the completion of the First Draft Final Report. This version of the Final Report normally

includes all graphics, tables, photos and text. This report is proofread by the TS/E Contractor and the TL. Within 10 days of the completion of the First Draft Final Report, the camera ready version of the Final Report is produced by the TS/E Contractor.

### **7.1.3.1 Draft Final Reports**

Draft Final reports are prepared for distribution to the members of the BPAT and other technical reviewers. The production schedule and number of draft reports required are outlined in the scope of services prepared by FEMA for each BPAT task. The number of draft versions produced ([see list in Section 7.1.3](#)) can vary according to the magnitude of the disaster, the number and sensitivity of technical and political issues involved, and other circumstances.

The primary goal of the draft production and review process is to establish the content of the report and ensure its accuracy. Decisions regarding fonts and type sizes, final page layouts, and other issues that affect the appearance of the final, printed report are usually made later. Consequently, the First Draft Final BPAT report may be produced with a word processing program (e.g., MS Word) rather than the page layout program (e.g., PageMaker) used for the final product. After the report content, including graphics, is well established, any remaining drafts may be produced in a more final form.

A complete draft BPAT report typically consists of the following:

- cover
- title page
- table of contents
- body of the report (text and graphics)
- appendixes (as necessary)

Specific format requirements are discussed in the following paragraphs.

**Cover.** The cover of the report usually consists of both text and graphics. The text includes the report title, including any subtitles; the spelled out name of FEMA; and a reference to any agencies that may have participated in the BPAT's evaluations (for example, the International Conference of Building Officials, which assisted in the field investigations for the Oklahoma – Kansas May 3, 1999 Tornado BPAT). Graphics are usually color photographs that illustrate the theme of the report. The TS/E Contractor selects graphics with the approval of the TM.

All draft versions of a BPAT report are titled “Draft Report” and are labeled as such. These words appear as part of the report title. Labeling of draft versions of the report is essential. Because of the sensitive nature of the information presented in the report and the potential for misrepresentation of preliminary conclusions and other information by the media and the public, the TL may direct the TS/E Contractor to add “Draft” labels to other portions of the report (e.g., title page, individual report pages). After draft versions of the report are reviewed, changes to the title of the report and to the cover graphics may be necessary.

**Title Page.** The title page, which immediately follows the cover, contains the main title of the report, the spelled out name of FEMA, the date, and the FEMA logo. Graphics may be included, as appropriate, on the title page.

**Table of Contents.** The table of contents lists all the sections and subsections in the report. It may also list tables and figures (i.e., graphics) that appear in the report and their corresponding page numbers. If appendixes are included in the report, they are listed at the end of the table of contents. The titles of all sections, subsections, and appendixes in the table of contents must be consistent with those in the body of the report. Titles that appear on tables and figures in the body of the report may occasionally be too long to be reproduced conveniently in the table of contents. In such circumstances, they may be condensed.

**Body of the Report.** All the major sections that compose the body of a BPAT report including the Executive Summary, as discussed in [Section 7.1.1](#), are identified with numerical designations. For example, the Executive Summary is Section 1, the Introduction is Section 2, and subsections, depending on their level, would be 2.1, 2.1.1, and so on. Each major section (e.g., Introduction) begins on a new page, and the section heading is centered at the top of the page. All subsection headings, regardless of their levels, are flush left. Each section of the report is paginated separately, with compound numbers that consist of the section number and the appropriated page number, separated by a hyphen.

In the printed Final Report, figures are interspersed throughout the body of the report in such a way that they appear as near as possible to their citations in the text. Although this arrangement is convenient for the reader and results in a visually pleasing product, it entails a significant effort because of considerations regarding type size, page length, paragraph breaks, and figure size. Because revisions affecting these factors will be made throughout the draft production and review process, this approach is not always practical for draft copies. When necessary figures may be presented on separate pages that follow the page on which they are cited.

**Appendixes.** Appendixes provide information that is relevant to the BPAT process but that would not be appropriate in the body of the report. Appendixes appear at the end of a BPAT report.

### **7.1.3.2 Final Report**

A contractor selected by the Government Printing Office (GPO) prints the Final Report. The report is printed directly from digital files prepared by the TS/E Contractor. The files are submitted to the TM on disk (e.g., zip, CD) and are accompanied by two color copies of the report – one for the TL and one for GPO – that show how the printed report should look. The TS/E Contractor is responsible for preparing the package of materials necessary for FEMA to forward to GPO. This includes a completed copy of the *GPO Desktop Publishing – Disk Information* form. FEMA's Printing, Publications, and Graphics Division assigns FEMA publications number and date to be shown on the cover of the report.

## **7.2 Responsibilities**

The joint responsibilities of FEMA and the members of the BPAT in the report preparation process are primarily decision making and coordination. These responsibilities are discussed in the following sections.

### **7.2.1 Identifying Report Audience**

The intended audience is not necessarily the same for all BPAT reports. The audience depends on the nature of the disaster, the depth to which local officials are involved in the BPAT process, the types of recommendations presented in the report, and other circumstances specific to the disaster. Depending on the type of disaster, the primary intended audience might be community officials, building contractors and trades people, model code groups, or others. From the results of the field inspections and interaction with other groups, the TL will determine who the primary audience will be. For example, the BPAT for Hurricane Georges in the Gulf Coast, focused on mitigation success stories. It is important that this determination be made as soon as possible because it affects the content of the report, including the types and amount of technical and policy information provided and the writing style.

### **7.2.2 Verifying and Revising Standard Report Content, Organization, and Format**

As noted in [Section 7.1](#), the standard report content, organization, and format presented in this manual may be revised as necessary to meet special needs. The results of the BPAT process, coupled with community and other needs identified by the BPAT and FEMA, determine whether the standard structure and format are adequate and, if not, to what

extent they must be revised. Deviations from the established standards could include adding, deleting, or combining standard sections and increasing or decreasing the amount of information provided about specific topics.

### **7.2.3 Determining the Number and Type of Graphics to be Used**

The number and types of graphics used in the BPAT report depend on various factors, including the following:

- the extent of the disaster
- the types of damage observed
- the number, types and complexity of construction systems used in the disaster area
- the number and complexity of recommendations presented in the report
- the intended audience
- the availability of existing graphics products that can be used in the report

Because of the effort involved in producing illustrations, the production schedule may also be a factor. All decisions concerning graphics needs should be made by the BPAT and approved by the TL as soon as possible so that adequate time is allowed for graphics production, including the necessary coordination with any graphic services contractors.

### **7.2.4 Establishing Production Schedule**

The TM, in consultation with the PO, along with information and recommendations provided by the BPAT, establishes the production schedule for the report. The schedule addresses not only the production of the final report, but also all draft distribution and review activities carried out by the TS/E Contractor, the BPAT, FEMA staff, local officials, RO and DFO staff, and any other parties involved in the BPAT process.

### **7.2.5 Identifying Points of Contact**

Usually, the points of contact for coordination among, FEMA, the BPAT, and the TS/E Contractor are the PO, the TL, and the TM, respectively. Before report production begins, or as soon as possible during the production process, FEMA should either verify that these established points of contact are adequate or identify any additional or alternative points of contact required. For example, it might be necessary to allow for direct coordination between the TL and the TS/E Contractor's technical writer or between the PO and the TM.

### **7.2.6 Identifying Other BPAT Report Reviewers**

During the course of conducting field operations and upon return from the field, various interested parties, besides BPAT members, typically express an interest in reviewing draft versions of the BPAT Reports. The TS/E Contractor shall make all reasonable attempts to include persons that request permission to review the report in the review process. Often these persons have intimate knowledge of local conditions or represent groups or organizations with a vested interest in the observations, conclusions, and recommendations of the BPAT. Comments from persons with local knowledge and/or interests can often add value to the content of the BPAT Report. Before agreeing to allow anyone not on the BPAT to review the report, the TM shall discuss and obtain the concurrence of the TL.

## **7.3 Additional BPAT Responsibilities**

The additional responsibilities of the BPAT in the report preparation process are primarily providing information (text and graphics) for inclusion in the report and reviewing draft reports. These responsibilities are discussed in the following sections.

### **7.3.1 Preparing Draft Report or Draft Report Sections**

One or more members of the BPAT may prepare the entire draft report or sections of it. In some situations, the TL may wish to do some of the report writing. For those sections not prepared by the TL, the TM shall assign that responsibility to the appropriate team member(s). This decision is made at the final meeting of the BPAT, while the team is still in the field. Once the draft text is written, the TL reviews it and makes the final decision on any unresolved questions or comments. The TS/E Contractor then uses the draft text and draft figures ([Section 7.3.3](#)) to prepare the draft report. The TL will monitor the progress on preparing the draft but it is the TM's responsibility to ensure that the established production schedule is met.

### **7.3.2 Providing Graphics**

The TL and other members of the BPAT determine what illustrations, photographs, and other graphics should be included in the report.

**Illustrations.** The team members may design their own illustrations, provide existing illustrations that can be modified as necessary to meet the needs of the report, or provide existing illustrations that can be reproduced.

**Photographs.** The source of photographs used in the report is usually 35mm slides taken by the members of the BPAT during the field inspection as approved by the TM.

**Other Graphics.** Examples of other graphics the team may wish to include in the report are FIRMs, community maps, charts and graphs, and maps produced with GIS.

For each graphic, the BPAT must provide a caption and any special notes that must appear on or in conjunction with it. Also, the relationship of the graphic to the text must be clearly indicated so that citations can be incorporated into the text at the appropriate locations during the production of the typed draft.

### **7.3.3 Reviewing Draft Reports**

After the TS/E Contractor prepares each draft version of the report, the members of the BPAT and another selected reviewers receive copies for their review. The team members and other reviewers must complete their reviews and return their comments according to the established production schedule to the TS/E Contractor. All comments must be submitted in writing, either in a memorandum or as annotations on the review copies. The TS/E Contractor reviews the comments and, if necessary, schedules a meeting with the TL to discuss the comments. At the discretion of the TM, the TL then compiles the comments and forwards them to the TM.

## **7.4 Technical Support/Engineering Contractor Responsibilities**

The TS/E Contractor prepares the draft and final versions of the report, including text and graphics; incorporates revisions resulting from reviews by the TL, remainder of BPAT, and other reviewers; and coordinates with the TM to ensure that all issues affecting production are resolved. These responsibilities are discussed in the following sections.

### **7.4.1 Preparing Final Report**

After all necessary draft versions of the report have been prepared and all reviews completed, the TS/E Contractor prepares a review copy of the final report. By this time, the PO usually has determined how the final report will be reproduced, what methods will be used to prepare the materials submitted for printing, and whether the services of an outside vendor will be used. This determination is based on information provided by the TS/E Contractor and the Printing, Publications, and Graphic Division of the Operations Support Directorate.

Once the TL has approved the review copy or identified any final changes that need to be made, the TS/E Contractor will prepare the artwork for the final report. If the services of

outside vendors are needed, the TS/E Contractor will coordinate with the vendors as necessary. The contractor submits the digital files (on CD ROM) for the final report to the PO, who transmits them to the Printing and Publications Branch, which coordinates the printing with GPO.

#### **7.4.2 Developing presentation materials**

The TS/E Contractor shall develop a presentation that follows the final BPAT Report. The presentation shall be in a format acceptable to the TL. Currently *Microsoft Powerpoint* is the preferred medium for this presentation. This presentation shall be completed with 14 days following delivery of the camera-ready materials for the final BPAT Report.

#### **7.4.3 Preparing the Report for Inclusion in FEMA's Web Site**

The TS/ E Contractor shall provide to FEMA an electronic version of the final BPAT Report in a format acceptable to FEMA's Office of Media Affairs. Currently, this is in the form of *Adobe Acrobat Reader* files (.pdf ) broken down in chapters and subsections that allow easy downloading

#### **7.4.4 Archiving**

Materials developed or used by the BPAT and the TS/E Contractor during the BPAT process include the following:

- daily dairy or web site
- slides and photographs taken by the team members
- field notes recorded by the team members
- memorandums summarizing telephone conversations and meetings
- draft versions of the BPAT report
- reviewer's comments on draft version of the report.
- supplementary information used in the report preparation, e.g., reports, illustrations, photographs, videos, other materials produced by private or public entities.

These materials provide vital documentation for the entire BPAT process, especially the recommendations presented in the BPAT report. Therefore, the TS/E Contractor, in such a way that they can be retrieved when needed, must store them. After the final BPAT report has been issued, the TS/E Contractor, at the direction of the PO, will request that

all members of the BPAT submit any slides, photographs, or other materials they developed or obtained as part of their BPAT responsibilities. The TS/E Contractor will then complete the following tasks:

- review all the materials, as well as all relevant in-house materials
- resolve any questions concerning missing or incomplete materials with the PO
- prepare a detailed inventory, organize the materials, and store them until such time that the PO directs the contractor to transmit the materials to another location, such as the closeout of the contract

After the inventory is prepared, the TM shall provide a copy to the PO. The TM and the PO maintain the inventory so that they can respond quickly if FEMA receives requests for copies of, or inquiries concerning, stored materials.

# **APPENDIX A**

## **BPAT Pre-Deployment Information Package**

Dear Potential BPAT Member:

In response to hurricanes, earthquakes, and other disasters, the Federal Emergency Management Agency (FEMA) often deploys Building Performance Assessment Teams (BPATs) to conduct field investigations at disaster sites. BPATs are composed of both government and private sector nationally recognized experts in various building science and hazard-related fields. The Technical Support and Engineering (TS/E) Contractor manages the BPAT program, under contract to FEMA. Private sector consultants, who serve on BPATs, work as subconsultants to TS/E Contractor.

The mission of the BPAT program is to study post-disaster building performance and to document failures and successes in an effort to promote damage reduction. To accomplish this mission, the BPAT program uses the combined resources of a Federal, state, local and private sector partnership. To learn more about the BPAT's purpose and goals, refer to FEMA's BPAT web page at [www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat).

The ability to quickly form and deploy BPATs is essential to the success of the BPAT program. Therefore, to increase the efficiency of the BPAT process, particularly the procurement of expert services and the deployment of BPATs to the field, FEMA has developed this standardized BPAT Pre-deployment Package to address some commonly asked questions. This package is intended for subcontractors, subconsultants, BPAT roster members, and other potential members of BPATs such as Federal employees "mission-assigned" to the BPAT by FEMA.

## **Frequently Asked Questions and Answers**

### **Who is part of the BPAT?**

FEMA BPATs usually include the following types of members: representatives of FEMA Headquarters and of FEMA Regional Offices State and local officials public- and private-sector experts in technical disciplines such as structural and civil engineering, architecture, building construction, natural hazard research, building code and land use measures development and enforcement, and technical writing.

### **When will I know whether FEMA is going to form and deploy a BPAT?**

When a disaster of national significance occurs, FEMA's Project Officer instructs TS/E Contractor to begin forming a BPAT. The TS/E Contractor then queries the existing BPAT database, a list of experts who are interested and eligible BPAT members. If you are chosen, the TS/E Contractor will contact you to determine your availability for participating as a member of the BPAT. Next, the TS/E Contractor will submit your name and resume to FEMA for approval. A BPAT is then formed, and the entire team is put on hold. About 2 to 3 days after the disaster has occurred (e.g., after landfall of a hurricane), FEMA deploys a Preliminary Field Assessment Team (PFAT) to determine whether the deployment of a full BPAT is appropriate. The PFAT quickly assesses the damage in affected areas and determines whether the BPAT should be deployed. FEMA then informs the TS/E Contractor whether a BPAT will be deployed. If a team is to be deployed, the schedule is revised as necessary to account for any changes to the composition of the team. The TS/E Contractor then begins organizing the logistics of deploying the team. The TS/E Contractor will call all of the BPAT members, authorizing them to travel to a specified destination at a designated time. The BPAT meets the next day for a debriefing and to make a field schedule.

### **When should I book my airline ticket? Who pays for it? How am I reimbursed for hotel, meals, etc.?**

In most cases, not all members of the BPAT are being reimbursed for travel expenses. Always coordinate with the TS/E Contractor to determine whether your travel expenses are reimbursable. Once you are authorized to travel, you are responsible for making your own airline reservations and paying for your tickets. You will be reimbursed for your travel expenses in accordance with Federal government travel regulations and the terms of the TS/E Contract. Standard government per diem varies by state and city. Typically, the per diem for meals is approximately \$35 per day. The hotel per diem will vary greatly by location. Check the web site [www.dtic.mil/perdiem/pdrform.html](http://www.dtic.mil/perdiem/pdrform.html) for more information. BPAT members who subcontract through the TS/E Contractor should submit their travel expenses on their regular invoices to the TS/E Contractor for reimbursement.

**What rate will FEMA pay subcontractors?**

For those who will be subcontractors to the TS/E Contractor, a rate is negotiated with the TS/E Contractor prior to field deployment. Estimating the exact rate is difficult. Rates are approximately equal to those paid by the government for private work.

**Do I need a rental car?**

Unless otherwise directed by the TS/E Contractor, the TS/E Contractor arranges for transportation in the field. If you are traveling on a reimbursable basis, do not rent a car unless specifically authorized by the TS/E Contractor.

**What type of equipment should I take?**

You are responsible for providing any necessary equipment such as a mobile phone, pager, laptop computer, printer, GPS, and digital camera. The TS/E Contractor will take the photographs to be included in the BPAT report. If you want your photographs included in the report, you must coordinate with the TS/E Contractor. Slides or prints from a conventional film camera are preferred over photographs from a digital camera because they produce a higher-quality image. ([see BPAT Personal Checklist](#))

**What clothing should I bring?**

Bring proper field attire for the climate in which the BPAT will be working. Jeans and t-shirts are appropriate. It is a good idea to bring enough clothes for at least 1 week. If necessary, you can usually visit a laundromat. OSHA-approved Steeltoe / steelshank boots are recommended. In preparing for deployment, the cost of obtaining personal items (including personal safety equipment) is the sole responsibility of the BPAT members. No costs associated with obtaining items for deployment shall be reimbursed without the expressed prior authorization of the TS/E Contractor. ([see BPAT Personal Checklist](#))

**What safety issues should I be concerned with?**

The TS/E Contractor will provide hard hats for the team. People with allergies may have problems and should consult their doctor before traveling with the BPAT. Make sure that you bring adequate amounts of any prescription medications. It is recommended that you bring bug spray. Check the Center for Disease Control and Prevention web site for immunization information. Sometimes BPATs travel to areas that are U.S. possession and territories the Caribbean such as Puerto Rico and the U.S. Virgin Islands, where tropical diseases may be present.

**Is the fieldwork physically demanding?**

BPAT fieldwork can be quite physically demanding for several reasons. Since hurricanes often make landfall in tropical and subtropical environs, fieldwork often occurs in areas of extreme exposure to the sun along with high temperatures and humidity. Additionally there are situations where the BPAT must be housed in facilities that have temporarily lost their ability to produce air-conditioning. Vehicular access into damaged areas is often restricted by damage to transportation infrastructure and debris which often results in having to walk considerable distances over debris covered, uneven, and unstable terrain. These factors, in combination with long work hours, often result in BPAT deployments being physical demanding.

### **Are accommodations made for BPAT members with disabilities?**

FEMA and the TS/E Contractor will make all reasonable accommodations for BPAT members with disabilities. The ability to make such accommodations during field operations is often severely restricted because of the chaotic nature of disaster sites which is not within the control of FEMA nor the TS/E Contractor. BPAT members, who are disabled and require special accommodations, should bring such requirements to the attention of FEMA and the TS/E Contractor as soon as possible. FEMA and the TS/E Contractor will evaluate these special needs and will make all reasonable efforts to ensure that the person in question can safely and productively participate in the BPAT.

### **Once I am selected to be a BPAT member, what can I do to prepare?**

If possible, familiarize yourself with the local building and land use codes in use in the area where the BPAT will be working. For floods, look to the National Flood Insurance Program (NFIP) regulations and practices, in addition to building codes and standards.

### **What can I do to better understand FEMA's mitigation programs?**

FEMA's web site contains a wealth of information on FEMA's mitigation programs ([see www.fema.gov/mit](http://www.fema.gov/mit)). This includes the BPAT web site at [www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat). Another way to gain further knowledge about FEMA's mitigation programs, is to obtain training on natural hazard mitigation. One such training is available for college faculty and Federal government employees at FEMA's annual Multi-hazard Building Design Summer Institute (MBDSI) offered at FEMA's Emergency Management Institute (EMI) each summer. In addition EMI, offered other resident and home study courses on mitigation and emergency management. ([See www.fema.gov/emi](http://www.fema.gov/emi))

### **What are other sources of information?**

The BPAT web site [www.fema.gov/mit/bpat](http://www.fema.gov/mit/bpat) is an excellent source of information. In addition, you can review other BPAT reports. Also, check Greenhorne & O'Mara, Inc., the current TS / E Contractor's web site at ([www.g-and-o.com/services/NHE\\_services/nhe\\_bpat.htm](http://www.g-and-o.com/services/NHE_services/nhe_bpat.htm)) This site will also have information that is useful to potential BPAT members.

What is expected of me in the field? What will we be looking at in the field?

In most cases, you will not be collecting detailed damage data, but you will be making general observations about structural damages in order to develop recommendations. Usually, you will be provided with a list of items to investigate in the field developed by the team.

### **Who is in charge of field operations?**

FEMA's BPAT Team Manager has the overall responsibility for the BPAT, including field operations. However, the TS/E Contractor is in charge of all the logistics associated with the BPAT, including the production of reports and other BPAT products and assigning work to subcontractors.

### **How long are the workdays in the field? Will I be working weekends? How long will the field work last?**

BPAT members work long hours in the field for a period of approximately 1 to 3 weeks. Typically, BPATs will work through weekends and holidays. This work requires dedication. Since the availability of housing is often limited in disaster areas, the BPAT is often required to find housing well away from the disaster site which then requires considerable travel time just to travel to and from the disaster site each day. It is important to realize that it may be difficult to communicate with your office or family while working on a BPAT. Mobile phone service is often interrupted. For this reason, BPAT members should not expect to have the time or facilities to conduct work, other than that directly associated with the BPAT, while deployed in the field.

### **What methods are used to conduct field assessments?**

Field assessments are conducted by air, ground transportation, and by foot. Aerial assessments are often conducted using an UH-60 Blackhawk helicopter or light plane. Ground transportation may be by car, van, 4 wheel drive vehicle, or Humvee.

**Who do I see if there are logistical problems?**

The TS/E Contractor Team Manager will address any logistical problems that arise in the field.

**What is expected of me after we leave the field?**

After the fieldwork is completed and on the last day in the field, a meeting is held to begin work on the draft BPAT report. Under the direction of FEMA's Project Officer and the TS/E Contractor's Team Manager, an outline is developed, writing assignments are made, and a schedule is developed for the draft BPAT report. Observations, findings, and preliminary conclusions are generated for the report after the team has left the field. The report writing/revision process lasts for another 3 to 4 months.

## **Personal BPAT Deployment Checklist**

- ☐ Clothes
- ☐ A 7-day supply of clothes (dress for the climate where the BPAT is deployed)
- ☐ Medications
- ☐ A minimum 10 day supply of all prescription drugs and necessary medications
- ☐ Safety and Protective Equipment
- ☐ OSHA-approved steeltoe/steelshank boots
- ☐ Protective Eye Wear
- ☐ Sun Glasses
- ☐ Breathing Mask (in sensitive to dust or other fine particulate)
- ☐ Personal Care Items
- ☐ 10 day supply of toiletries
- ☐ Suntan lotion
- ☐ Backup eye glasses (in case eye glasses are broken or lost)
- ☐ Working Materials
- ☐ Mobile phone (service may be intermittent)
- ☐ Pager (service may be intermittent)
- ☐ Laptop computer
- ☐ Portable printer with supply of paper
- ☐ 3/5" floppy diskettes for digital cameras and laptops
- ☐ GPS unit
- ☐ Digital camera
- ☐ 35mm camera
- ☐ 35mm slide film
- ☐ Note Pad to for recording observation and description of photographs
- ☐ Audio tape recorder and blank tapes

## **APPENDIX B**

### **BPAT Confidentiality Agreement**

## **Building Performance Assessment Team Confidentiality Agreement**

Subcontractors and all members of the Building Performance Assessment Team, herein called the BPAT, agree not to divulge to third parties, or permit access to, information of any nature pertaining to the project or to this Agreement. Specifically, subcontractors and all other members of the BPAT agree to maintain information developed during BPAT field deployment and report preparation process in the strictest confidence. Disclosure of information may only occur when authorized in writing by the Federal Emergency Management Agency, herein called the FEMA, or FEMA's Technical Support and Engineering Contractor, herein called the TS/E Contractor.

Subcontractors may not assign this Agreement or the process therefrom, nor employ lower-tier subcontractors without the express written permission of the TS/E Contractor.

Subcontractors agrees to abide by all applicable provisions of the Prime Contract between the TS/E Contractor and Owner. The TS/E Contractor shall make copies of such Prime Contract available upon request.

Subcontractor shall be responsible for all damage to life and property due to its activities in connection with the services required under this Agreement and shall indemnify, defend and hold harmless the TS/E Contractor and Owner and their officers, employees and agents against any claims or legal liability arising out of Subcontractor's wrongful act or negligent performance of its services under this Agreement. Subcontractor shall maintain Workman's Compensation. Employer's Liability, general Liability insurance and will submit to the TS/E Contractor insurance certificates indicating coverage in amounts and with carriers satisfactory to the TS/E Contractor.

Subcontractors shall advise the TS/E Contractor of the name of its manager responsible for supervision of the services covered under this Agreement. Subcontractors warrant that it has no conflict of interest and will acquire none.

### **Subcontractors:**

### **All Other BPAT Members**

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Date

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Type/Print Name

\_\_\_\_\_  
Type/Print Name and Title

## **APPENDIX C**

### **Checklist for Preliminary Field Team (PFAT)**

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## I. Introduction

Community: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_

Date of visit: \_\_\_\_\_ Time: \_\_\_\_\_

Name of PFA team member(s): \_\_\_\_\_

Organization(s)/Affiliation(s): \_\_\_\_\_

## II. Disaster/Damage Information

### Type of event:

☐ Riverine Flood

☐ Tsunami

☐ Fire

☐ Ice Jam

☐ Erosion

☐ Alluvial Fan Flood

☐ Hurricane

☐ Tornado

☐ Dambreak

☐ Northeaster

☐ Earthquake

☐ Subsidence

☐ Landslide

Other: \_\_\_\_\_

### Damage to:

☐ Primarily residential buildings

☐ Single-family

☐ Multi-unit

☐ Primarily non-residential buildings

☐ Commercial

☐ Industrial

☐ Critical facilities

☐ Farm

☐ Institutional

☐ Other

### Distribution of damaged buildings within affected area:

☐ Widespread

☐ Isolated

☐ Concentrated in specific areas (describe):

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**Damage caused by (Rank if appropriate):**

- |   |  |
|---|--|
| <input type="checkbox"/> Flood inundation | <input type="checkbox"/> Stormwater    |
| <input type="checkbox"/> Seismic forces   | <input type="checkbox"/> Erosion/scour |
| <input type="checkbox"/> Wave impact      | <input type="checkbox"/> Deposition    |
| <input type="checkbox"/> Wind             | <input type="checkbox"/> Debris impact |

Other: \_\_\_\_\_

**Primary type(s) of construction affected**

- |  |   |
|--|---|
| <input type="checkbox"/> Engineered        | <input type="checkbox"/> Masonry                        |
| <input type="checkbox"/> Non-Engineered    | <input type="checkbox"/> Modular                        |
| <input type="checkbox"/> Wood Frame        | <input type="checkbox"/> Combination wood frame/masonry |
| <input type="checkbox"/> Manufactured home | Other: _____  |

**Primary foundation type(s) of affected buildings:**

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> Basement      | <input type="checkbox"/> Piles/piers |
| <input type="checkbox"/> Crawlspace    | <input type="checkbox"/> Shear wall  |
| <input type="checkbox"/> Slab-on-grade |                                      |

**III. Analysis/Need for BPAT**

**Analysis needed due to:**

- |   |  |
|---|--|
| <input type="checkbox"/> Design issues            | <input type="checkbox"/> Local regulations |
| <input type="checkbox"/> Performance of materials | <input type="checkbox"/> Nonconforming use |
| <input type="checkbox"/> Construction methods     | <input type="checkbox"/> Exceeded design   |
| <input type="checkbox"/> Code administration      | <input type="checkbox"/> Other: _____      |

**Successful performance indicative of:**

- |  |
|--|
| <input type="checkbox"/> Design                      |
| <input type="checkbox"/> Materials                   |
| <input type="checkbox"/> Construction methods        |
| <input type="checkbox"/> Code requirements           |
| <input type="checkbox"/> Local regulatory activities |
| <input type="checkbox"/> Other: _____                |

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#### **IV. Deployment Recommendation**

Will assessment of building failures and/or successes yield information that can be used to reduce future damages? \_\_\_\_ yes \_\_\_\_ no Why?

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Is BPAT deployment warranted? \_\_\_\_ yes \_\_\_\_ no Why?

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#### **V. Anticipated BPAT Requirements**

Where should BPAT field inspections be concentrated and what issues should be analyzed at each site?

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**What types of expertise should BPAT members possess?**

##### **Technical Skills**

- |  |  |
|--|--|
| <input type="checkbox"/> Building construction   | <input type="checkbox"/> Geotechnical engineering  |
| <input type="checkbox"/> Structural engineering  | <input type="checkbox"/> Hazard mitigation         |
| <input type="checkbox"/> Architecture            | <input type="checkbox"/> Environmental Engineering |
| <input type="checkbox"/> Code development        | <input type="checkbox"/> Planning                  |
| <input type="checkbox"/> Construction inspection |  |

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### **Administrative/Support Skills**

- |  |  |
|--|--|
| <input type="checkbox"/> Technical writing/editing | <input type="checkbox"/> Word Processing |
| <input type="checkbox"/> Graphic Arts              | <input type="checkbox"/> Other: _____    |

### **What special support services will the BPAT require:**

- ☐ Aerial photography/videography
- ☐ Rental vehicles (cars, vans, 4-wheel drive) Specify: \_\_\_\_\_
- ☐ Special security
- ☐ Airplane/helicopter
- ☐ Cameras (still, video)
- ☐ Boat
- ☐ Special clothing
- ☐ Mobile phones
- ☐ Other: \_\_\_\_\_

### **What field hazards/inconveniences may affect BPAT members conducting inspections:**

- |  |   |
|--|---|
| <input type="checkbox"/> Unsafe structures         | <input type="checkbox"/> Blocked/closed roads         |
| <input type="checkbox"/> Elevated water levels     | <input type="checkbox"/> Lack of hotel accommodations |
| <input type="checkbox"/> Hazardous/toxic materials | <input type="checkbox"/> Other: _____                 |
| <input type="checkbox"/> Insects/snakes            |   |

## **VI. Local Coordination**

List any technical needs identified by local officials(s):

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Describe involvement of, or coordination with, local official(s) during PFA:

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List local official(s) who will potentially serve on BPAT or act as primary point(s) of contact during BPAT deployment:

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**FEMA OFFICE APPROVAL\***

The following FEMA representative has reviewed and approved this completed checklist:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

\*To be completed by the TL

## **APPENDIX D**

### **Glossary**

March 2000

**Building Performance Assessment Team (BPAT)** – A team of FEMA and state / local government representatives, technical specialists, and support personnel who, under the direction of FEMA's Mitigation Directorate's Program Assessment and Outreach Division conduct field inspections and technical evaluations of the performance of buildings subjected to forces generated by disaster events (e.g., hurricanes, floods).

**Building Performance Assessment Team Report** – Report prepared by FEMA's Mitigation Directorate Program Assessment and Outreach Division that documents the findings and conclusions of the BPAT and presents recommendations for improvements to building design; construction methods, materials, and codes; and permitting activities.

**Contracting Officer (CO)** – The Director of the Fire, Flood, and Mitigation Division of FEMA's Office of Financial Management. The CO is the only person authorized to incur expenses in the name of the U.S. Government and, as such, is the only person authorized to issue verbal authorization to the TS/E Contractor to incur expenses

**Contracting Specialist** – Is an employee of the Fire, Flood, and Mitigation Division of FEMA's Office of Financial Management and acts as the Contracting Officer's representative during contract and task order negotiations. This person is the primary point of contact within FEMA concerning contract issues.

**Deployment Phase** – Period during which a BPAT conducts field inspections of buildings and coordinates with other agencies (Federal, state, local).

**Disaster Field Office (DFO)** – Temporary office established by FEMA at a disaster site to coordinate disaster response activities.

**Federal Emergency Management Agency (FEMA)** – The Federal agency that is responsible for the management of the BPAT program.

**Memorandum of Understanding (MOU)** – Agreement by which FEMA secures the services of other Federal agencies, state or local governments, and professional organizations.

**National Flood Insurance Program (NFIP)** – The program which makes Federally-backed flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

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**Post-Deployment Phase** – Period during which FEMA’s Mitigation Directorate Program Assessment and Outreach Division evaluates the effectiveness and efficiency of the BPAT process.

**Post-Event Stage** – Portion of the pre-deployment phase, after the occurrence of the disaster event, during which FEMA’s Mitigation Directorate Program Assessment and Outreach Division carries out the activities necessary to determine whether deployment of a BPAT is warranted.

**Pre-Deployment Phase** – Period during which FEMA’s Mitigation Directorate Program Assessment and Outreach Division performs the pre- and post-event activities necessary to determine whether deployment of a BPAT is necessary.

**Pre-Event Stage** – Portion of the pre-deployment phase, prior to the occurrence of the disaster event, during which FEMA’s Mitigation Directorate Program Assessment and Outreach Division carries out the planning and coordination activities necessary to anticipate post-event needs.

**Preliminary Field Assessment Team (PFAT)** – Initial field inspection performed under the supervision of FEMA’s Mitigation Directorate Program Assessment and Outreach Division as quickly as possible after a disaster has occurred to determine the scope and types of damage sustained by buildings in the disaster area and to determine whether a BPAT should be deployed.

**Program Manager (PM)** – Representative of the Technical Support/Engineering Contractor who is responsible for all support services provided to the Mitigation Directorate by the contractor and its subcontractors.

**Project Officer (PO)** – Representative of FEMA’s Mitigation Directorate Program Assessment and Outreach Division who directs the activities of the Technical Support/Engineering Contractor.

**Public Information Officer (PIO)** – Member of FEMA Headquarters staff (and some regional office staffs) who is responsible for responding to media and public inquiries on behalf of the Agency.

**Regional Offices (ROs)** – FEMA has ten regional offices. Each region serves several states, and regional staff work directly with the states to help plan for disasters, develop mitigation programs, and meet needs when major disasters occur.

**Standard Operating Procedures (SOP)** – Procedures established by the Program Implementation Division that define the responsibilities and activities of the Division and its Technical Support/Engineering Contractor for the pre-deployment, deployment, and post-deployment phases of the BPAT process.

**Team Leader (TL)** – Representative of FEMA’s Mitigation Directorate Program Assessment and Outreach Division who participates in and is responsible for the activities of the BPAT.

**Team Manager (TM)** – Member of the TS/E Contractor who is responsible for managing the day-to-day operations of the BPAT, including logistical issues.

**Technical Support/Engineering (TS / E) Contractor** – Engineering firm under contract to FEMA that provides technical and administrative support for the BPAT process.